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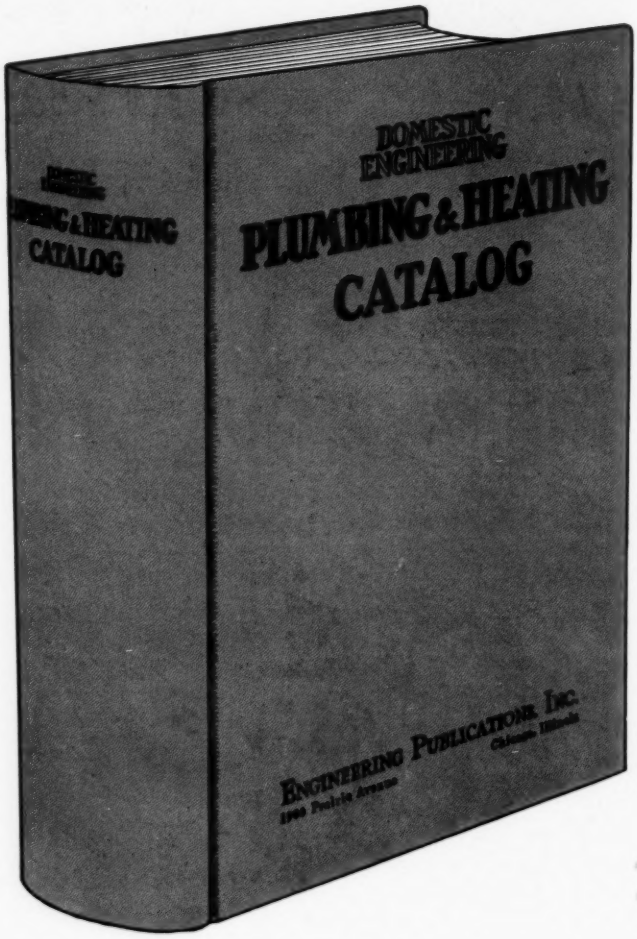
DOMESTIC ENGINEERING

lumbing & Heating Contracting and Merchandising

To Every Reader

A Merry Christmas

VOLUME 136 NUMBER



"All You Say of It"

"The Plumbing and Heating Catalog is all you say of it, complete and practical and I know we will find it very helpful in our business."

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National Assn. Master Plumbers,
San Antonio, Tex.

"The Plumbing and Heating Catalog enables us to cut down time on our estimating."

John P. Hines, Hines Bros.,
Plumbing & Heating Contractors,
Great Neck, N. Y.

"I consider myself very fortunate in having received The Plumbing and Heating Catalog. It is very instructive and profitable."

F. F. Whitesell,
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"The Plumbing and Heating Catalog is great. It is very valuable in connection with the operation of our business."

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Steam and Hot Water Heating,
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"We like the substantial manner in which the book is made up and also the completeness of the information contained."

Knoedler & Meredith,
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Ernest Margeson,
Plumbing and Heating Contractor,
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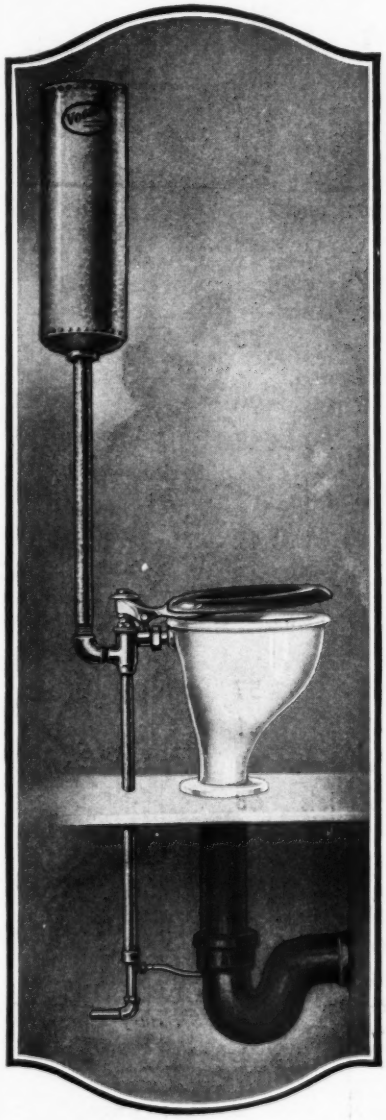
DOMESTIC ENGINEERING

PLUMBING & HEATING CATALOG

1900 Prairie Ave., Chicago, Ill.

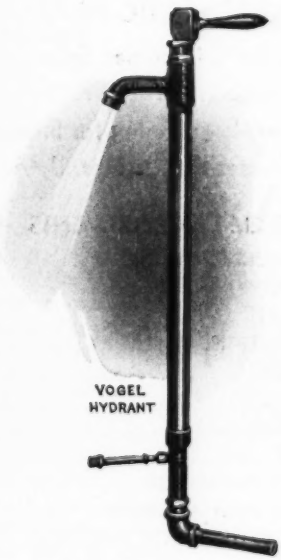
AN EXTRA CLOSET, OUTSIDE, IS A CONVENIENCE YOUR CUSTOMERS WILL PAY FOR



NUMBER ONE VOGEL FROST-PROOF CLOSET

BUT it must be a frost-proof, and it must be a **VOGEL**, because only **VOGELS** give service year in and year out, without repairs, and are sure never to freeze.

And the **VOGEL** Frost-Proof Hydrant has always been a favorite source of extra profits for plumbers. They are installed in yards—garages—playgrounds—and any place where a supply of water is needed all year 'round.



VOGEL FROST-PROOF HYDRANT

Literature on **VOGEL** *Frost-Proof Closets and Hydrants sent promptly upon request.*

JOSEPH A. VOGEL COMPANY

Wilmington, Del. St. Louis, Mo.

See inside back page for VOGEL advertisement on No. 10 and 10-A Closet Combinations

VOGEL PATENTED *Products*

DOMESTIC ENGINEERING

Plumbing & Heating Contracting and Merchandising

Established 1889

Vol. 137, No. 6 | December 12, 1931 | Whole No. 1958

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To make any sleight-of-hand a success . . . get the onlookers to overlook one or two realities.

You can be your own illusionist,— convincing yourself and reaching some remarkable conclusions,— just by disregarding a few important details. . . .

But decisions that stand the test of time must be based on all of the *realities* that affect the issue; not *some* of them.

It is especially important to overlook no realities when analyzing steam consumption of heating systems. For correct conclusions and sound decisions it is necessary that every one of the important factors shall be checked and weighed.

Altogether, 45 variable factors may affect the steam consumption of *any* heating system. We have prepared a "check-list" of these 45 variables to help you check your steam consumption figures and estimates. We will be glad to send you one or more copies of this check-list.

Engineers, architects and heating contractors will find the related subjects of heating steam consumption analysis, estimating and heating cost accounting, as presented by Warren Webster & Company, of vital interest. *A request for further details will bring a Webster steam heating specialist to discuss this vitally important subject.*

A Heating System for Every Need and Every Purpose

Heating requirements vary so widely that no one type of heating system can be expected to provide the greatest return on the dollar invested in the heating equipment for all types and sizes of buildings. Realizing this, Warren Webster & Company have consistently developed an entire group of Webster Systems of steam heating to provide *a heating system for every need and every purpose.*

Webster MODERATOR System provides "Controlled - by - the-Weather" heating and makes possible new methods of operation and new standards of economy. Can be applied to any existing steam heating system of sufficient size.

IMPROVED Webster Vacuum System provides distribution balanced from the start—the supply of steam to each radiator is so equalized that all radiators get steam at the same time and in substantially the same proportion, regardless of distance from the boiler. May be supplemented by HYLO Vacuum Variator, permitting manual control by building operator. Applicable to new or existing installations.

IMPROVED Type "R" System for residences and larger buildings as well, combines advantages of steam heating with advantages of hot water, but without limitations. Meets fully the operating requirements of newer fuels, newer types of radiation and newer thermostatic controls. Also provides better-than-ever heating service with old radiation and old controls.

Full details of any or all of these systems will be furnished on request.

Warren Webster & Company, Camden, N.J.
Pioneers of the Vacuum System of Steam Heating
Branches in 60 Principal U. S. Cities
Darling Bros., Ltd., Montreal, Canada

-since 1888
Webster
Systems of Steam Heating

a I 58a

This is one of a series of advertisements discussing the factors affecting heating steam consumption. The purpose of the series is to call attention to the methods of heating steam consumption analysis, estimate and heating cost accounting developed by Warren Webster & Company to provide a reliable basis for comparing heating system efficiency. Actual detailed facts and figures of steam consumption of a number of Webster Systems of Steam Heating, prepared in accordance with these methods, are available for your examination.

Between Ourselves

EACH day's mail adds more and more names to the long list of those who have voiced their approval of the co-operative plan sponsored by DOMESTIC ENGINEERING *for regaining gas appliance sales for the plumbing and heating dealer. In an article on Page 37, Maney J. Feeney, president of the Philadelphia Master Plmbers Association and a director of the N. A. M. P., lends his full support to the plan.* **Your Editor**

"UNTIL recently, air conditioning in the home, for the most part, has had to wait and follow the lead set by public institutions. That delay now seems to have been ended and, in the near future, air conditioning in the home seems sure to become a leading public interest, and with it a new industry will appear," says Prof. F. B. Rowley of the University of Minnesota, in an article in this issue entitled "Fundamentals of Air Conditioning in the Home." People have learned to appreciate the convenience and comfort that conditioned air provides and they want it in their homes. These installations are going to be made by someone and the heating contractor is the logical man to make them. He must start now to prepare himself for this business.

THE majority of plumbing contractors have found that on a remodeling job customers as a rule prefer to have the entire undertaking, including the decorations to be furnished after the new fixtures are set, handled as a unit, instead of having to deal with three or four material men and contractors. This, of course, makes it necessary for the plumber to have a knowledge of wall finishes for bathrooms and kitchens; but at the same time it makes it possible for him to figure on this phase of the work at a profit. Ability to take care of all the necessary details often has meant an easier sale, or perhaps a sale where the presentation of the plumbing fixtures alone would not have been sufficient to close the deal. An article on Page 50 gives the master plumber information on the various types of tile available.

THE Plumbing and Heating Merchandising section this time describes the merchandising methods of two plumbing and heating dealers who have met with no little success in conducting this important phase of their businesses. One of the articles tells how a Texas contractor has stepped out in front of his competitors and developed a market for home air conditioning equipment. The second article concerns a contractor in St. Stephen, N. B., who is an aggressive merchandiser.

"THE last issue of DOMESTIC ENGINEERING has just arrived. I enjoy every copy and wouldn't be without it." L. E. Wimpee, Birmingham, Ala.

THE AUTOMATIC HEAT section contains, as usual, descriptions of the successful efforts of heating contractors in the selling and technical phases of automatic heating equipment. A careful study of the practices that are being used with success by these contractors will give you ideas that can be applied to your own business. The facts set forth will no doubt answer many questions concerning business methods that are troubling you at this time.

IN RECENT years the plumbing contractor's work has branched out in many directions, and no longer is he strictly confined in his activities to the sanitary system and to the hot and cold water supply system. An article commencing on Page 38, entitled "How a Water Cooling System Was Installed," does more than describe a single installation of drinking water cooling equipment and piping. It goes on to indicate variations which might have been worked into the system if the requirements of the owner and users had called for them. The basic description centers about an installation which has just been completed.

AN ARTICLE in the next issue will tell more about the precautions which should be taken in the handling of enameled ware fixtures. Unless these fixtures are given the proper care and protection until finally turned over to the buyer, serious damage is apt to follow that will result in financial loss for the master plumber. If certain precautions are followed, however, losses from damage can be reduced to a minimum. After reading this article, we suggest that you bring it to the attention of your journeymen.

The man who is so busy that he does not have time to read his trade paper is like the man who was so busy chopping wood that he did not have time to sharpen his axe.

Its advantages will be endorsed by YOUR JOBBER

STOKES HARD RUBBER ADJUSTABLE GUIDE ARM

and

OVERFLOW TUBE

WITH REDUCING BUSHING

Here is an arm that swings to any desired point around the overflow tube and at the same time slides in and out, making it easy to connect with the wire from the tank ball. Its simplicity appeals to the man on the job; and its ready sale makes it a desirable item for both jobber and plumbing contractor.

Let us explain its advantages to you further. MAIL THE COUPON.

SOLD ONLY THROUGH JOBBERS

HARD RUBBER IN EVERY CONCEIVABLE FORM
MOULDERS OF PLASTICS

Moulders Since 1897

Look for the

Mark of Quality

Jos. Stokes RUBBER CO.

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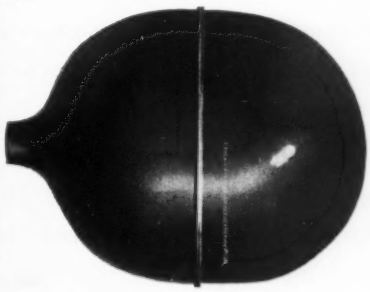


STOKES HARD RUBBER *FLOATS*

have all the advantages of the ordinary copper floats without their disadvantages. Not only are they buoyant and practically unbreakable, they will neither rust nor corrode. Hard Rubber is impervious to acid, and is ideal for underwater service. A STOKES Float in a tank is an indication of the quality of the toilet combination. Learn more about them. USE THE COUPON.

JOS. STOKES RUBBER CO., Dept. D. D-12, Trenton, N. J.
Please send me further information on Stokes Products I buy through

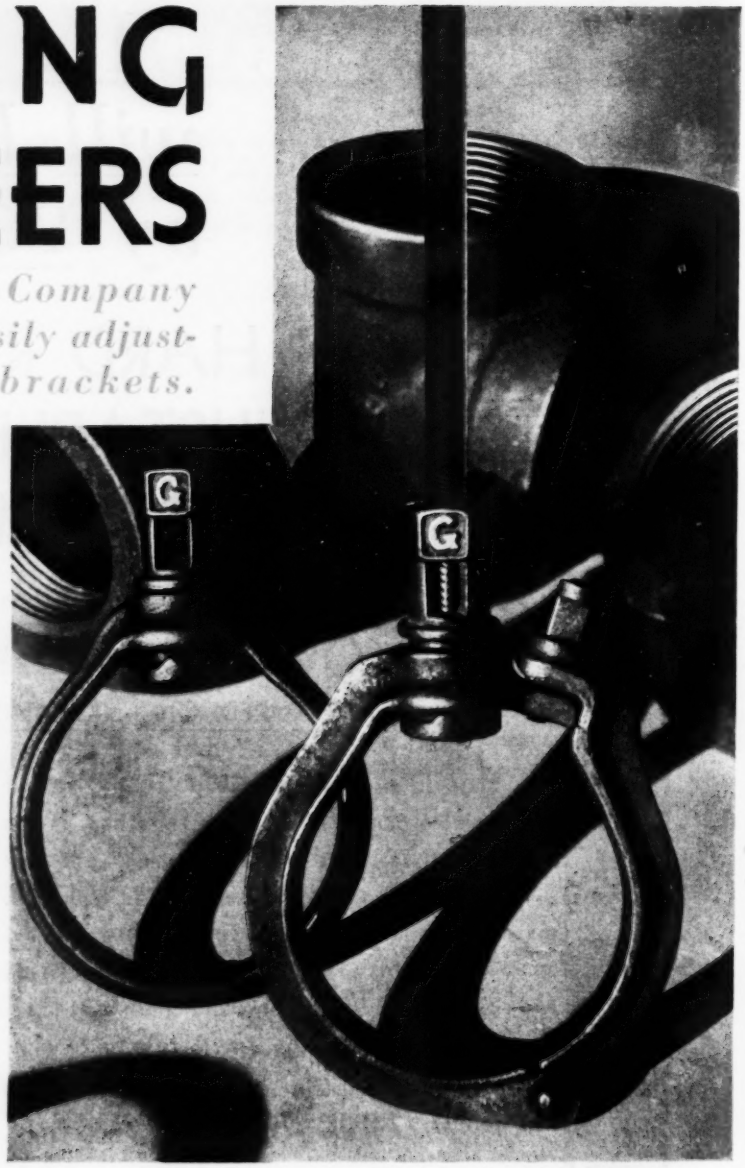
(Jobber's Name)

Your Name

Address

LEADING ENGINEERS

know why Grinnell Company designed a line of easily adjustable hangers and brackets.



The need for quick and accurate adjustment of Automatic Sprinkler pipe lines was largely responsible for the development of the Grinnell line of brackets and adjustable hangers.

Speedy installation is what makes profits these days. The quicker the pipe is hung the sweeter the profits!

By turning an adjusting nut on a Grinnell hanger, your workman levels his line easily and accurately as fast as it is hung. When finished, your installation is the pride of the owner. The architect wants your bids on his next jobs.

ALL THESE GRINNELL PRODUCTS

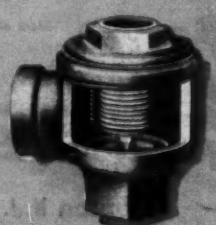
HANGERS

FITTINGS

Pipe fittings, cast and malleable, perfectly threaded, accurately machined and rigidly inspected. Pipe hangers adjustable after the pipe is up. Reduce installation costs and maintenance expense.

This trap, with the famous Hydron bellows, will operate a radiator for a lifetime without repairs.

THERMOFLEX TRAPS



AUTOMATIC

SPRINKLERS

The famous Quartz bulbsprinkler head. In most cases sprinklers will reduce insurance expense from 50 to 90 percent.

Where air dryness adversely affects processes, large savings are made by our humidification equipment.

HUMIDIFIERS

ARCHITECTS OF AMERICA know why

Grinnell Company has never made ordinary cast and malleable fittings.

Since super-quality fittings are needed for automatic sprinkler work, that is the standard for all fittings made by Grinnell.

Contractors prefer Grinnell fittings because of ease and speed of installation work. Building owners specify them because they want fine appearance and low maintenance. This applies equally to both the Grinnell cast and malleable lines.

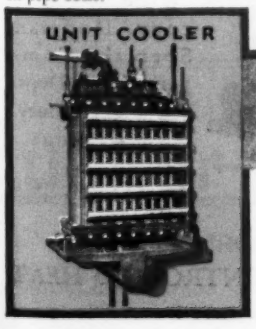
GRINNELL COMPANY INC.

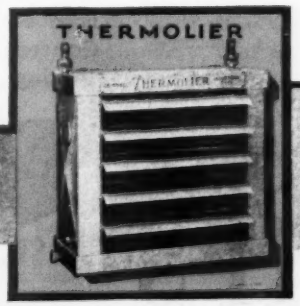
Branches in all principal cities

Executive Offices: Providence, R. I.

WILL SAVE MONEY

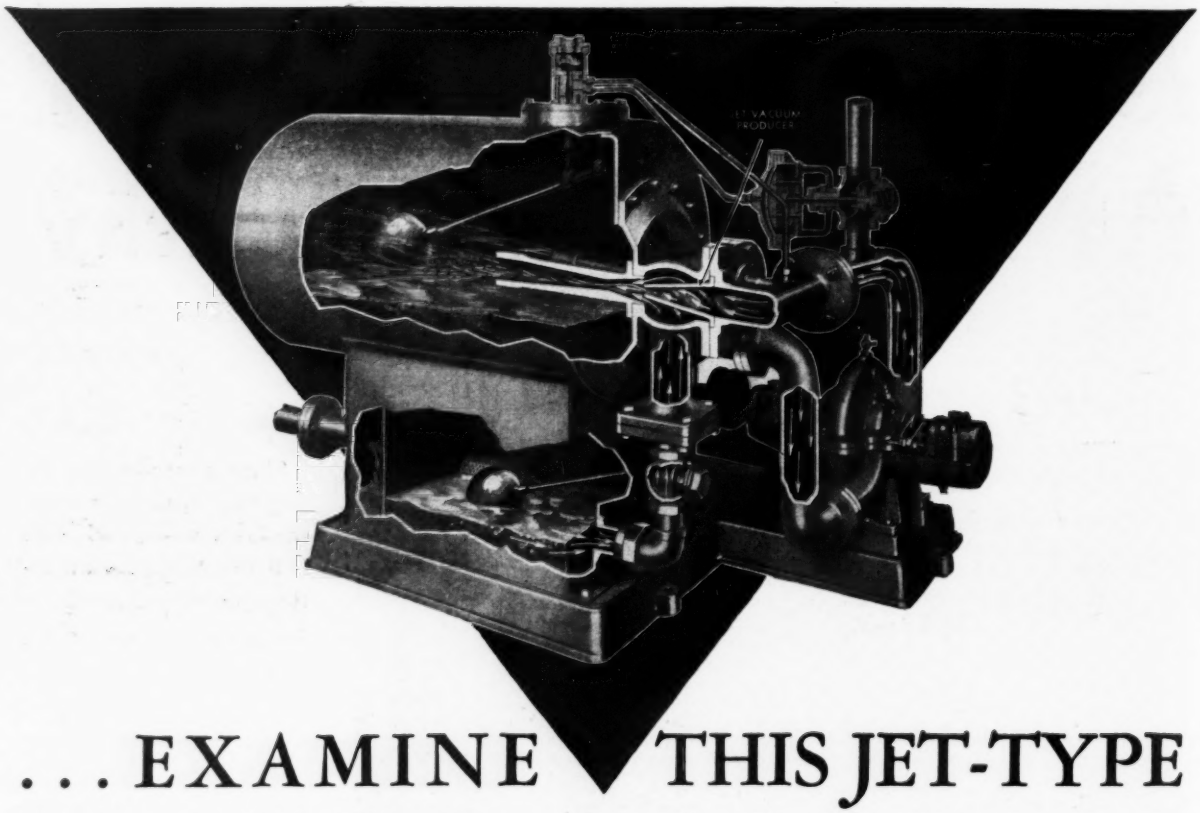
A revolutionary improvement in refrigeration. It replaces more than ten times its weight in pipe coils.



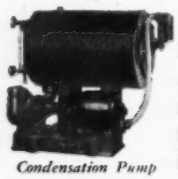


This remarkable Unit Heater is a better and cheaper means of heating industrial and commercial buildings. Heating systems can usually be modernized almost over-night, with a tremendous saving on fuel.

Pipe fabrication, lap joints, pipe bends, forged hangers and welded headers comprise the Triple XXX line for Super Power work. By modernizing to use high temperature steam your yearly savings will often run to five or six figures.



. . . EXAMINE THIS JET-TYPE VACUUM PRODUCER

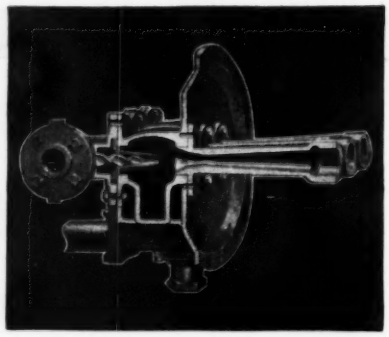


Condensation Pump

No simpler or more effective method has been found for exhausting air and vapors. Because of the condenser action of this jet and constant head pressure on suction side of pump, Hoffman-Economy Return Line Vacuum Pumps handle hotter water than other types of pumping units.

Some of the other features which contribute to remarkably satisfactory service are: Ample capacity for simultaneous discharge of air and water . . . integral sediment tank and strainer . . . standard motors operating at low speed . . . practical design . . . highest quality of materials . . . and low inlet for the return main connection, making a pump pit unnecessary in most installations.

Reciprocating Pump



This Hoffman-Economy Jet-Type Vacuum Producer is designed for lasting service. Examination of jets that have been in operation 10 years or more shows no appreciable sign of wear. It has no moving parts and avoids close clearances on the pump. Thus, its high efficiency is maintained.

HOFFMAN ECONOMY PUMPS

A Complete Line of Vacuum, Condensation and Air Line Pumps

No matter what type of heating system or what size the job—whether for a small industrial building or a towering skyscraper — Hoffman-Economy can furnish a pump of exactly the right specifications.

Our catalog gives complete technical information on Hoffman-Economy Pumps as well as Hoffman Controlled Heat and Hoffman Venting Valves. Write for your copy. Hoffman Specialty Company, Inc., Dept. RX77, Waterbury, Connecticut.

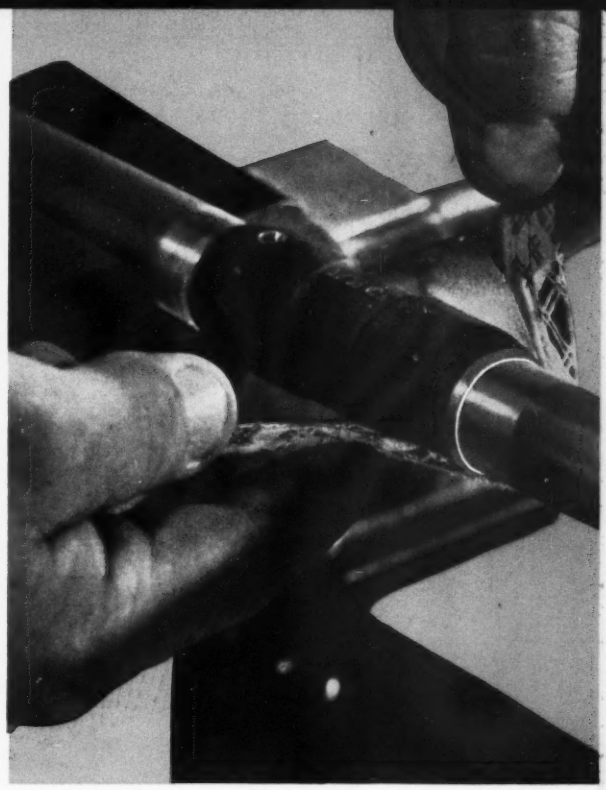
High Pressure Pump

ALSO MAKERS OF HOFFMAN VENTING VALVES AND HOFFMAN CONTROLLED HEAT

Costs Are Low, Yet STREAMLINE Brings A Higher Price

•

Your Chance for Profit Lies in This Combination



EVERY owner, builder, architect and engineer admittedly expects to pay more for copper than for iron, but the cost of an installation of Mueller STREAMLINE hard copper pipe and fittings is so reasonable that in many cases, plumbing and heating contractors, using this product, are meeting the figure for iron pipe and threaded fittings.

Between this recognition of a premium price for copper and the relatively low Mueller installation cost is the chance for a larger profit than the trade has seen in many a day.

The cost of a Mueller STREAMLINE installation is comparable to iron for three good reasons—a saving on insulation costs; a saving in the weight of materials; no waste endage.

If you are not familiar with these savings and what they mean in profits to you, consult your jobber or write for our catalog.

The heart of a Mueller installation is the patented joint. Cleaned, fluxed and heated, this joint is ready for the journeyman's skill. A few drops of solder are introduced into the solder feed hole. Immediately an unbroken solder ring is visible around the end of the fitting, showing, conclusively, that a perfect bond of pipe, fitting and solder has been formed. This is the unfailing sign of a perfect joint. Rust cannot corrode it. Expansion cannot work it loose. Vibration cannot make it leak. The joint is really stronger than the pipe itself.

Mueller STREAMLINE fittings are furnished in full range and in sizes from ¼" to 6" inclusive.

Mueller Brass Co.

PORT HURON, MICHIGAN

MUELLER BRASS CO. OF CANADA, LTD.
TORONTO, ONT.

Three Generations of Brass Making

DO CONSUMERS KNOW

the difference between

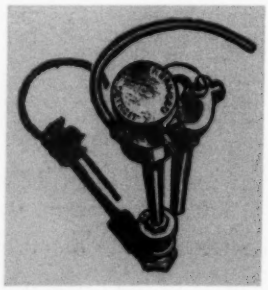
GOOD BALL COCKS

and

BAD ONES?

IF you think they don't, watch them when they're renting a new apartment or buying a new home. Watch them go out to the bath room and flush the closet. Watch them walk out or ask for repairs if the tank is too noisy.

Maybe they don't know that a ball cock makes the difference but they know that there **is** a difference between the quiet, leak-proof operation of the Sherwood Ball Cock and the wasteful, irritating operation of the ordinary ball cock.



Are you among the contractors who have taken Sherwood's tip on selling remodeling? If you aren't try it now. Order a few Sherwoods from your jobber, take them out with you on calls and let them find the prospects for bigger sales for you.

They'll do it. Their unusual operation, their splendid service will sell you with your customers and make new friends for you.

They'll make you headquarters for remodeling work. Order half a dozen or a dozen Sherwoods today. Go out and make calls with them. You'll be surprised how quick they'll sell.

SHERWOOD BRASS WORKS **Jefferson and Mt. Elliott Avenues** **DETROIT**

REPRESENTATIVES: J. A. Riordan Co. (Inc.), 1600 E. 7th St., Los Angeles — 303 Colman Bldg., Seattle — 955 Bryant St., San Francisco
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SHERWOOD Ball Cocks

« « « « «

Get the New NYE die with the Threaded Throat

Never say die- say NYE die

Nye's Die-Jest

Published in the Interest of Progressive Plumbers and Steamfitters and incidentally in the interest of the N. T. & M. W.

Vol. 1, No. 9 Price: One Order

There Is a Santa Claus!

Friends:

Merry Christmas, everybody! Even Japan. And it will be. I've got it all figured out. (And this last year or two I've gotten to be a pretty darned good figurer). You see, it's like this:

Business men still believe in Santa Claus. If they didn't, they would be out hustling around, instead of sitting around waiting. They would be wearing out shoes, instead of just pants.

Some think Santa Claus lives at the North Pole, and some think he's in Washington, and some Wall Street. Some think his name is Hoover, and some Congress, and some Morgan.

Anyway, most of them seem to believe in some sort of a Santa Claus; and so they are waiting for Christmas, to hang up their stockings, for some Santa Claus to fill full of prosperity.

Well, there's one good thing: if the American people want to hang up their socks, they will have to empty their socks of the money they have socked away in them now.

Maybe they'll buy bathtubs, but whatever they buy will benefit everybody. You've got to buy if you want to sell, whether it's work you have to sell, or washbowls.

So there *is* a Santa Claus! Santa Claus is ourselves! If you will buy pipe tools, I'll buy pants — and gosh knows I need 'em. Then the tailor will buy a bathtub — and he needs that, too,— as bad as you need new tools. *I* believe in Santa Claus, and so I have hung up my sock, and labeled it, "For Orders."

Merry Christmas, everybody. And what about old

Harry G. Nye

Otherwise known as The Nye Tool & Machine Works

(Copyright, 1931, by Harry G. Nye. All rights reserved.)

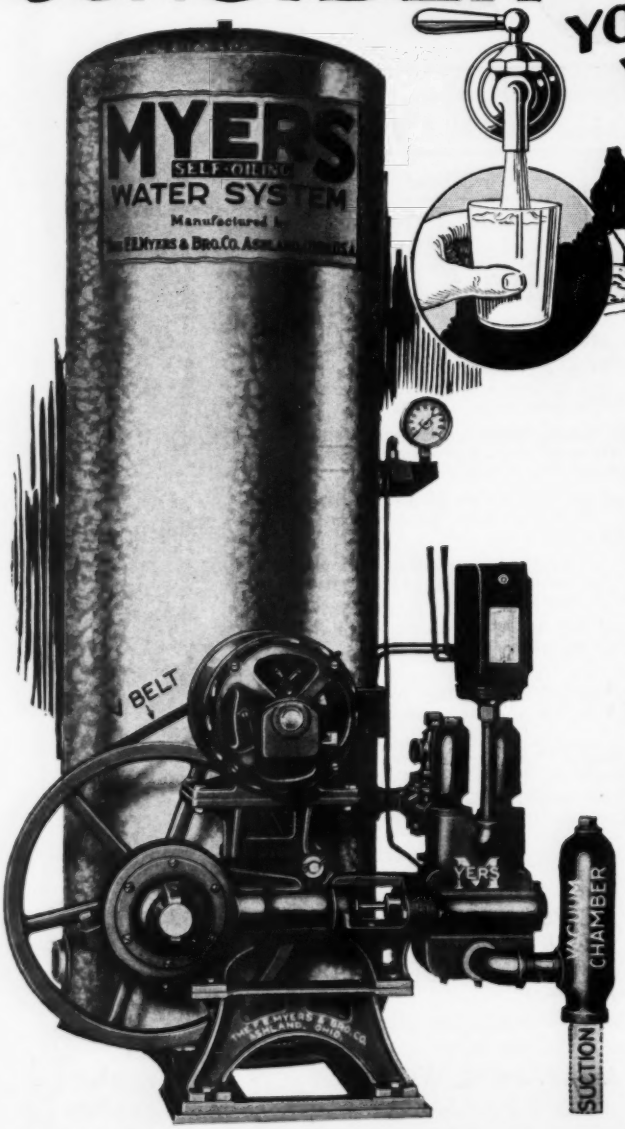
The celebrated skip-tooth die- genuine NYE

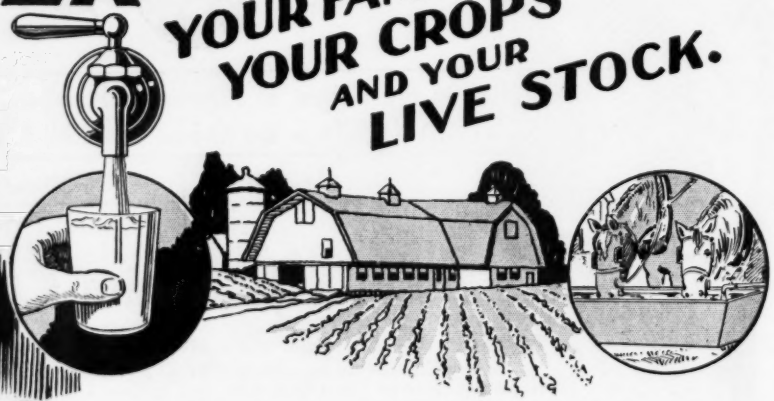
THE NYE TOOL & MACHINE WORKS
Manufacturers of High Grade Pipe Tools
4120-30 Fullerton Ave. Chicago, Ill.

You can't make good profits with bad tools

HAVE YOU EVER BEEN REAL THIRSTY?

CONSIDER— YOUR FAMILY, YOUR CROPS AND YOUR LIVE STOCK.





THE water supply for homes and farms becomes of more importance each day. A lot of people who have been caught without water at different periods during the past eighteen months are beginning to realize more and more that a shortage of water for household and sanitary purposes, for barns and feed lots, for irrigation and for fire protection is a serious menace to health and prosperity.

This lesson, learned through severe experience, is significant of the times. Its effect has been far-reaching. A new market has been created. Improved pumping machinery of larger capacity is in greater demand than ever before.

Here is the market to which we are directing your attention. A market that carries with it a substantial volume of year through business. A market that is never failing and one that Myers Self-Oiling Power Pumps and Water Systems are ideally adapted for.

There is a complete range of styles and sizes in the Myers line. Capacity range is from 200 to 10,000 gallons per hour. Units powered by motor, engine, wind or hand offer the real opportunity for every dealer to gather in additional profitable business during the Fall and Winter months.

Write or wire.

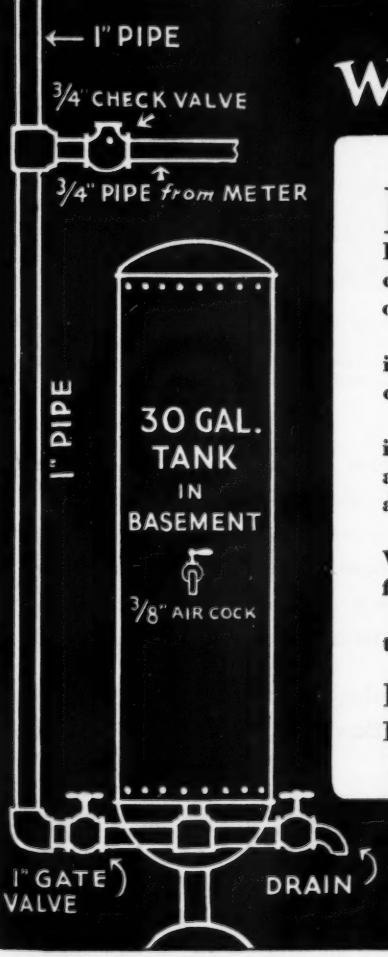
Take Off Your Hat To The MYERS
PUMPS · WATER SYSTEMS · HAY TOOLS · DOOR HANGERS

THE F.E.MYERS & BRO. CO. ASHLAND, OHIO.

PUMPS ✣ WATER SYSTEMS ✣ HAY TOOLS ✣ DOOR HANGERS

Keep Your Eye

on this simple Watrous Hook-up



HERE is a practical way to increase your chargeable hours and accessory profit.

Right in your trade area there are thousands of houses, duplexes and small apartments, whose bathrooms are as obsolete as the horse and buggy.

Every woman wants modern toilet facilities — complete in every detail. She frowns at the unsightly tank—an untidy catch-all.

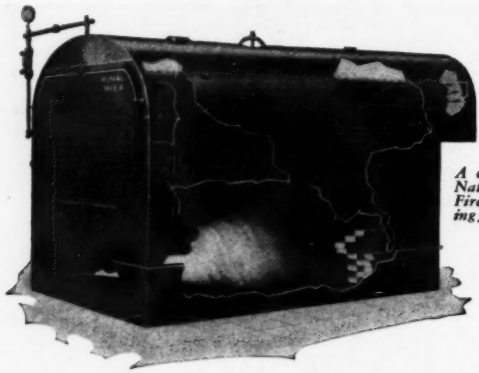
She doesn't like the screaming, screeching, nerve-wrecking ballcock used in old-fashioned closet fixtures. She wants a Watrous Flush Valve—like she sees in all modern hotels, apartments, public buildings and better homes.

With the new simple Watrous hookup, you can install Watrous Flush Valves where the street service is too small for direct connection.

Write for detailed information on this new business-getting plan or ask your Jobber.

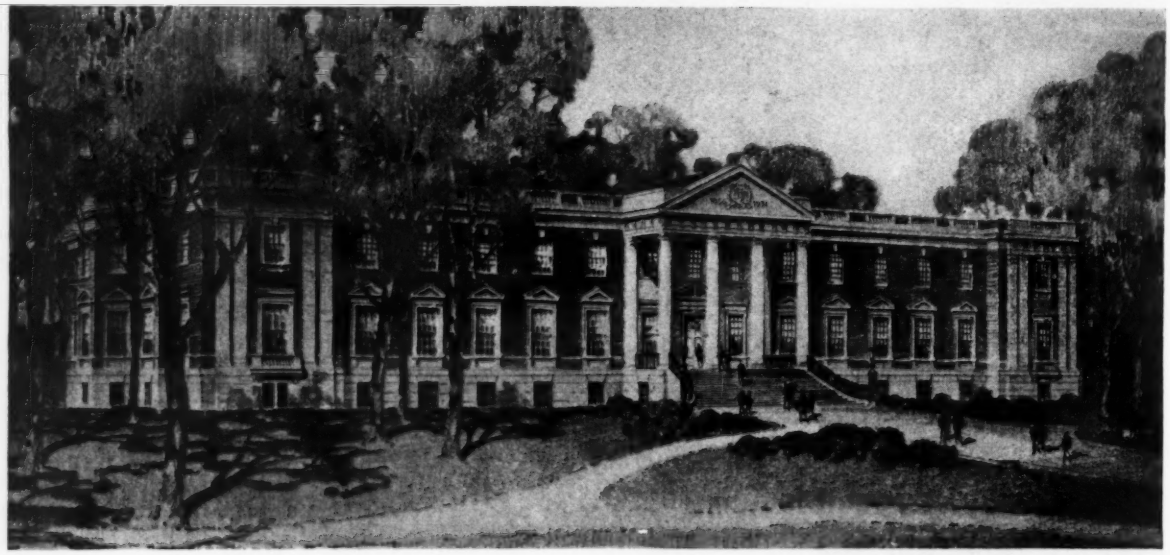
IMPERIAL BRASS MFG. COMPANY
1231 West Harrison Street, Chicago, Illinois

Watrous



A cut-away view of a National Premier Oil-Fired Steel Boiler, showing fire travel.

NATIONAL PREMIER *Oil-Fired* STEEL BOILERS



The Chicago Historical Society Building, located in Lincoln Park, Chicago. Graham, Anderson, Probst & White, Chicago, Architects; G. W. Hubbard, Chicago, Mechanical Engineer; Lundoff-Bicknell Company, Chicago, General Contractors; C. W. Johnson, Inc., Chicago, Heating Contractors.

In the NEW CHICAGO *Historical Society Building . . .*

The selection of National Premier Oil-Fired Steel Boilers for the splendid new building of the Chicago Historical Society is a tribute to advanced boiler design.

National Premier Boilers are particularly well-suited to oil burning applications. The high ratio of combustion chamber volume to the usual heat absorbing surfaces makes the boiler without a peer as a quick producer of steam. This high ratio insures more complete combustion, allows greater heat absorption, and effects substantial economies in fuel consumption.

The recessed front chamber, water-jacketed on five sides, plus the insulated cleaning doors, utilizes heat for steaming purposes that would otherwise be wasted in the boiler room. Scientific design, the finest of materials, the best of workmanship, unite to assure dependable and lasting service.

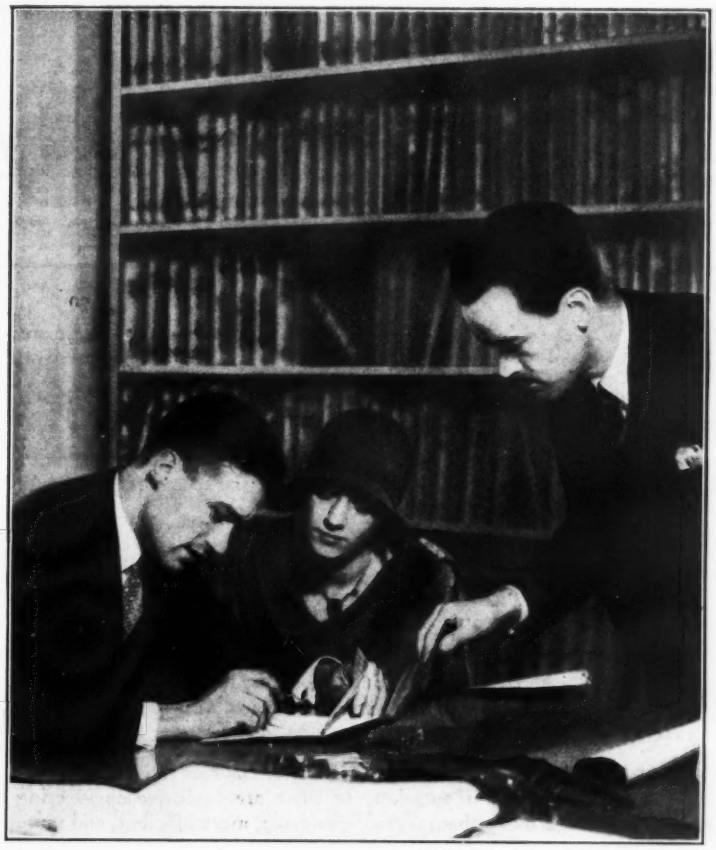
A catalog illustrating and describing the line of National Premier Steel Boilers will be gladly sent you, on request. Use the coupon.

NATIONAL RADIATOR CORPORATION

JOHNSTOWN, PENNSYLVANIA

Please send me a National Premier Steel Boiler Catalog.

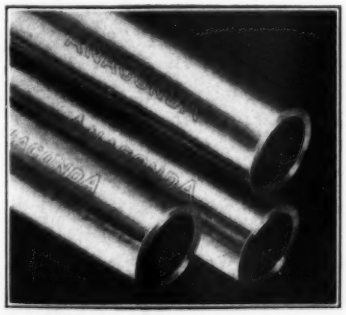
*Name*_____ *Address*_____



ANACONDA
from mine to consumer

"They *knew* what they wanted"

"They told me they wanted *good pipe.* When I suggested Anaconda Brass Pipe, they said, *That's it* . . . and I got the job."



Builders and home-owners nearly everywhere know the name "Anaconda" stands for dependable quality. Consistent advertising . . . and service records have established that reputation. You can capitalize this prestige, sell Anaconda Brass Pipe more easily because of it.

Leading plumbing supply houses carry Anaconda 67 for normally corrosive water, 85 Red-Brass Pipe for highly corrosive water, and Deoxidized Copper Water Tubes. The American Brass Company, General Offices: Waterbury, Connecticut.

ANACONDA BRASS PIPE

The market is ready now for Crane-Warlo Water Softeners

TODAY, when people are neither building nor buying luxuries there are few specialties whose potential sales can approach those of water softeners.

There is more opportunity to sell Crane-Warlo water softeners because they put practically every building in your city on your prospect list.

Crane-Warlo water softeners are made to answer the needs of all types of homes and dwellings. They are also made to answer the special requirements of hotels, institutions, industries, and clubs.

For homes, as an example, where quality, convenience and large capacity for softening water are more important than price, they are made in two styles: the *Semi-Automatic* and the *Hand-Operated C. W.* Both these can be depended on to deliver soft water in ample quantities with the least attention.

For most dwellings where price is the major factor, Crane-Warlo softeners have been worked out in brine tank and hand-operated styles whose low cost will satisfy the most cautious buyer; whose dependability will please the most exacting.

It is easier to sell Crane-Warlo water softeners. Back of them is the prestige of the Crane 76 year reputation. In them are exclusive engineering improvements which make them more dependable, more efficient, and more economical in operation.

They have up-flow softening which eliminates channeling and packing while it insures contact with the softening element of every drop of water.

Their mode of regeneration restores the mineral without wasting water or salt.

They are simple to operate, easily installed, and positive in performance.

Crane-Warlo water softeners are backed by a sales plan which makes it possible to sell them "in" as well as "out" of building seasons. For modernizing purposes they can be sold and installed under the Crane Budget Plan which enables you to get your money at once, your customer to take as many as twenty-four months in which to make convenient payments.

Get into this profitable specialty field. Crane Co. offers the right type of materials at the right prices, backed by the right plan. See your Branch manager, talk the market and sales possibilities over with him.

This new brine tank model BT-15 Warlo *Water Softener of 15,000 grain capacity for* **$129.50**
f. o. b. Rockford

This new hand-operated Model HO-12 Warlo *Water Softener of 12,000 grain capacity for* **$99.50**
f. o. b. Rockford

CRANE-WARLO *water softeners of larger capacities range in price from $150.00 to $460.00.*

•

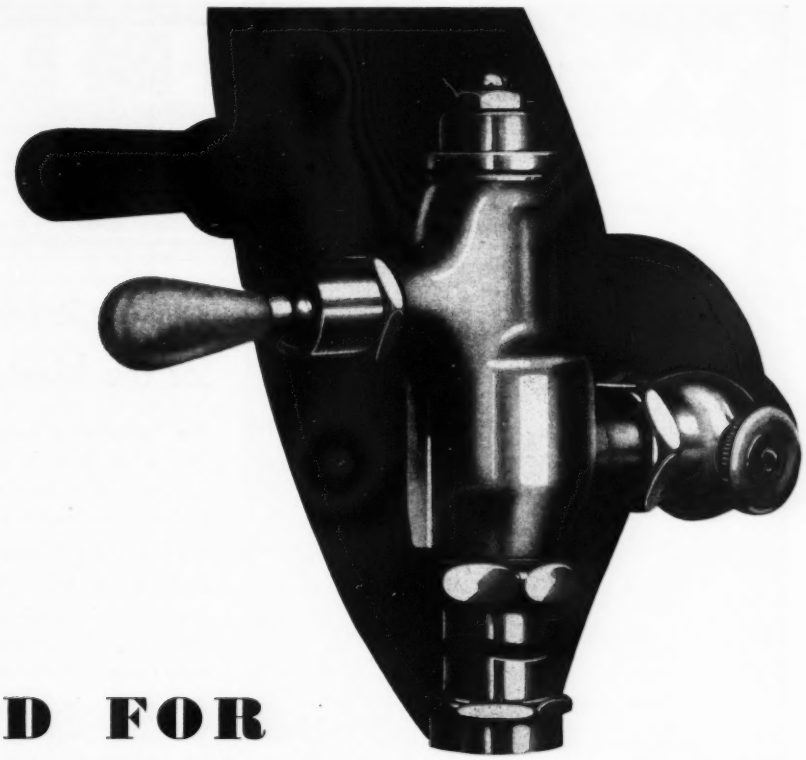
Manufactured by Ward-Love Pump Corp., Rockford, Illinois, makers of Industrial and Household Water Softeners, Automatic Water Systems, and Pumps.

CRANE

WATER SOFTENERS, WATER SYSTEMS, VALVES, AND FITTINGS

CRANE CO., GENERAL OFFICES: 836 SOUTH MICHIGAN AVENUE, CHICAGO
NEW YORK : 23 W. 44TH STREET

Branches and Sales Offices in One Hundred and Ninety Cities



DESIGNED FOR

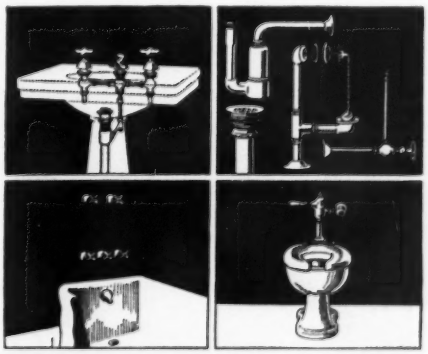
- *Quick Installation*
- *Easy Adjustment*
- *Positive Action*
- *Dependability*

IN BOTH design and precision of manufacture, the Scovill Flush Valve fulfils the four basic requirements of satisfactory service. . . . Installation is simple, requiring a minimum of the plumber's time. . . . Adjustment can be made from the outside, without shutting off the water supply. . . . Positive action is assured by the design, which is of the balanced type. Scovill Flush Valves open with flow and pressure, and close against, overcoming the problems of practically all variations of pressure. . . . Dependability results both from features of the design—self-lubricating plunger, self-cleaning by-pass, simplicity of construction—and from laboratory-tested standards of materials and manufacture. . . . Scovill Flush Valves are made in a wide variety of both exposed and concealed models. All exposed parts are highly finished, nickel or chromium plated.

SCOVILL MANUFACTURING COMPANY
PLUMBERS' BRASS GOODS DIVISION
WATERVILLE CONNECTICUT

Scovill

A COMPLETE LINE



Scovill Flush Valves . . . Shower and Bath Fixtures . . . Tubular and Miscellaneous Plumbers' Brass Goods for General Plumbing Requirements.

WOLVERINE

DEPENDABLE TRAPS

Making it easier for the Master Plumber

The "pre-fitting before boxing" of each Wolverine Trap is another of the many features that make Wolverine Brass Products preferred by Master Plumbers.

Positive fitting of each part of a Wolverine Trap assures rapid, economical installations.

The years of experience of Wolverine engineers in mechanics and sanitation result in a wide range of styles and patterns of traps.

The quality of material and workmanship of Wolverine Traps upholds the work of the Master Plumber and assures him satisfied customers.

WOLVERINE BRASS WORKS
GRAND RAPIDS (WB) MICHIGAN

We sell the Retail Plumbing Trade Exclusively

Each WB Trap is pre-fitted before boxing to insure easy installation.

To close jobs at a profit in these days, you need something more than price in your bids

Let Rounded "LIVE FIRE" Corners Clinch Replacement Jobs for YOU!

Send the story of Weil-McLain *fuel* economy along with your bids on fall replacement jobs. Close them at a profit by giving your prospect something more than price to think about!

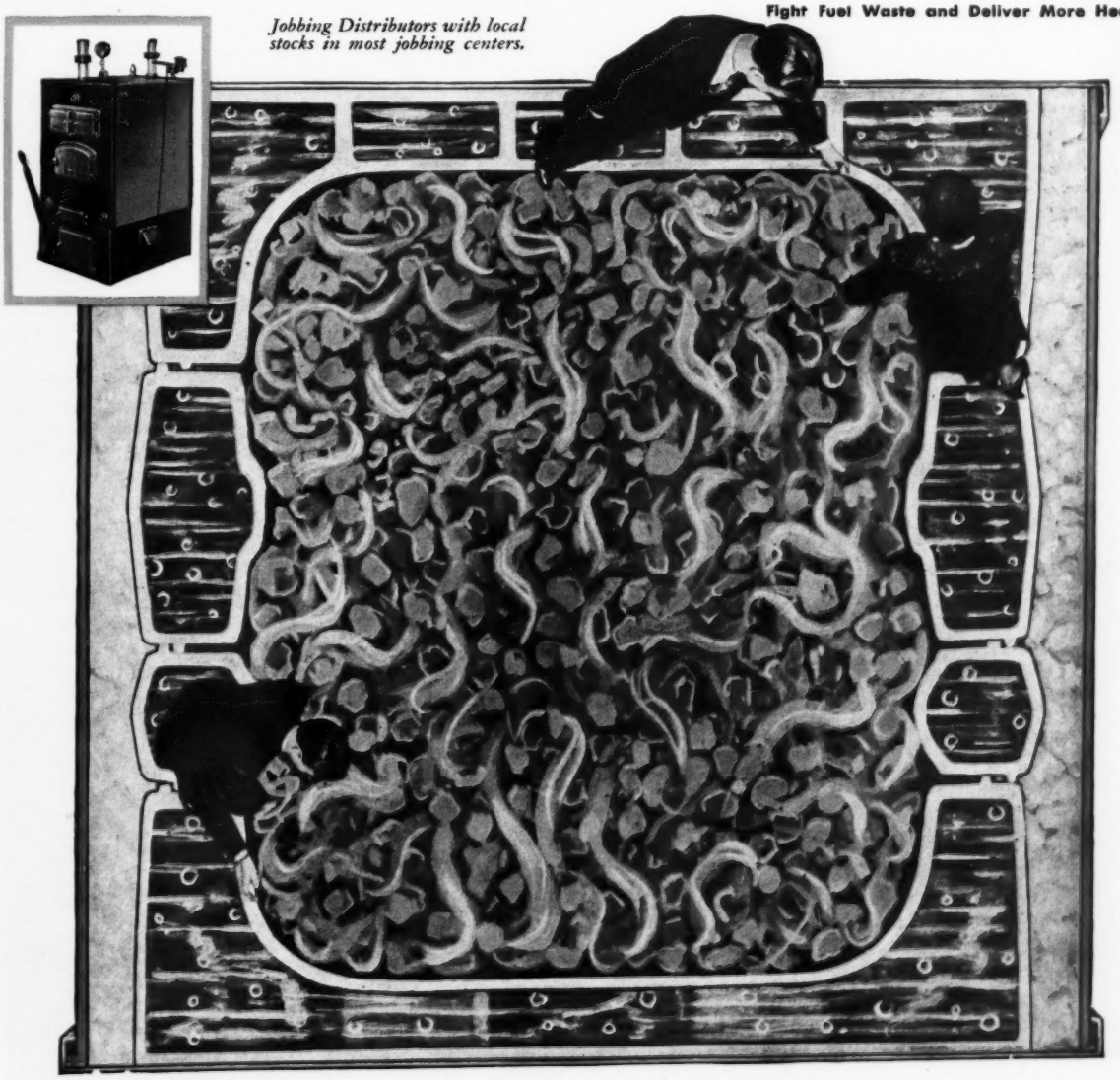
Take the rounded "live fire" corners of Weil-McLain Jacketed Boilers, for example. This feature assures a clean, bright fire at every point and stops fuel waste in the ash pit. To your prospect it means lower fuel bills, year after year—and that's what he wants.

Show him this and the other equally effective fuel-saving features included in the complete line of Weil-McLain Scientific Combustion Boilers: Round, Square, Jacketed, Self-Feed and Smokeless; also "Cameo" Radiators.

WEIL-McLAIN COMPANY
General Offices: Chicago. Boiler Plant and Offices: Michigan City, Indiana. Radiator Plant and Offices: Erie, Pennsylvania
Canadian Representatives: James W. Robertson Co., Ltd., Montreal, St. John, Toronto and Winnipeg

Weil-McLain
SCIENTIFIC COMBUSTION
BOILERS
Fight Fuel Waste and Deliver More Heat

Jobbing Distributors with local stocks in most jobbing centers.



BALANCE

Balance means an equal distribution of weight or force; but it also means, in Smith & Wesson Valves, an equal distribution of quality.

No one part of the valve has been neglected for the betterment of another. All have been developed equally toward perfection.

That is why Smith & Wesson Flush Valves give complete service—save money—save trouble.

Number eight of a series of advertisements emphasizing the perfect Balance of Smith & Wesson Flush Valve Design and Construction.

Remember the BALANCED VALVE. Ask for Smith & Wesson Flush Valves by name.

SMITH & WESSON
FLUSH VALVE DIVISION
SPRINGFIELD MASS.

FLUSH VALVES SMITH AND WESSON

Elaborate Homes or Modest...

P R PIPE

(PAUL REVERE PIPE)

is chosen

Greenhaven's superb homes are large, modern, near the top in the price range of realty developments. Sunshine City's 1000 small homes are compact, attractive, priced for the average purse.

Yet, in both developments, P R Pipe was selected for the plumbing!

V. Green Co., builders of Greenhaven, at Mamaroneck, N. Y., required the highest quality regardless of price. Charles H. Reis, Inc., developers of Sunshine City, Woodridge, N. J., demanded quality, too . . . but, with economy.

P R Pipe is 99.9% pure copper, completely deoxidized and having a gun-barrel inside finish, free from flaws. It is rust-proof, will resist repeated freezing, and has the effective thickness of S. P. S. (standard pipe size) pipe.

It comes in two tempers: hard, for new work, exposed runs: soft, for concealed replacement work.

When you install P R Pipe, you give your customers life-long plumbing satisfaction combined with economy. You build for yourself a reputation that means more business, more profits. Find out about P R Pipe, also about Revere Brass Pipe. Address Revere Copper and Brass Incorporated, 230 Park Avenue, New York City.

Type of home built by V. Green Co., at Greenhaven. P R Pipe used throughout, because quality was the chief consideration.

Street scene in Sunshine City. P R Pipe was selected because it results in plumbing of the best quality, but also because of its true economy.

Revere Copper *and* Brass

INCORPORATED

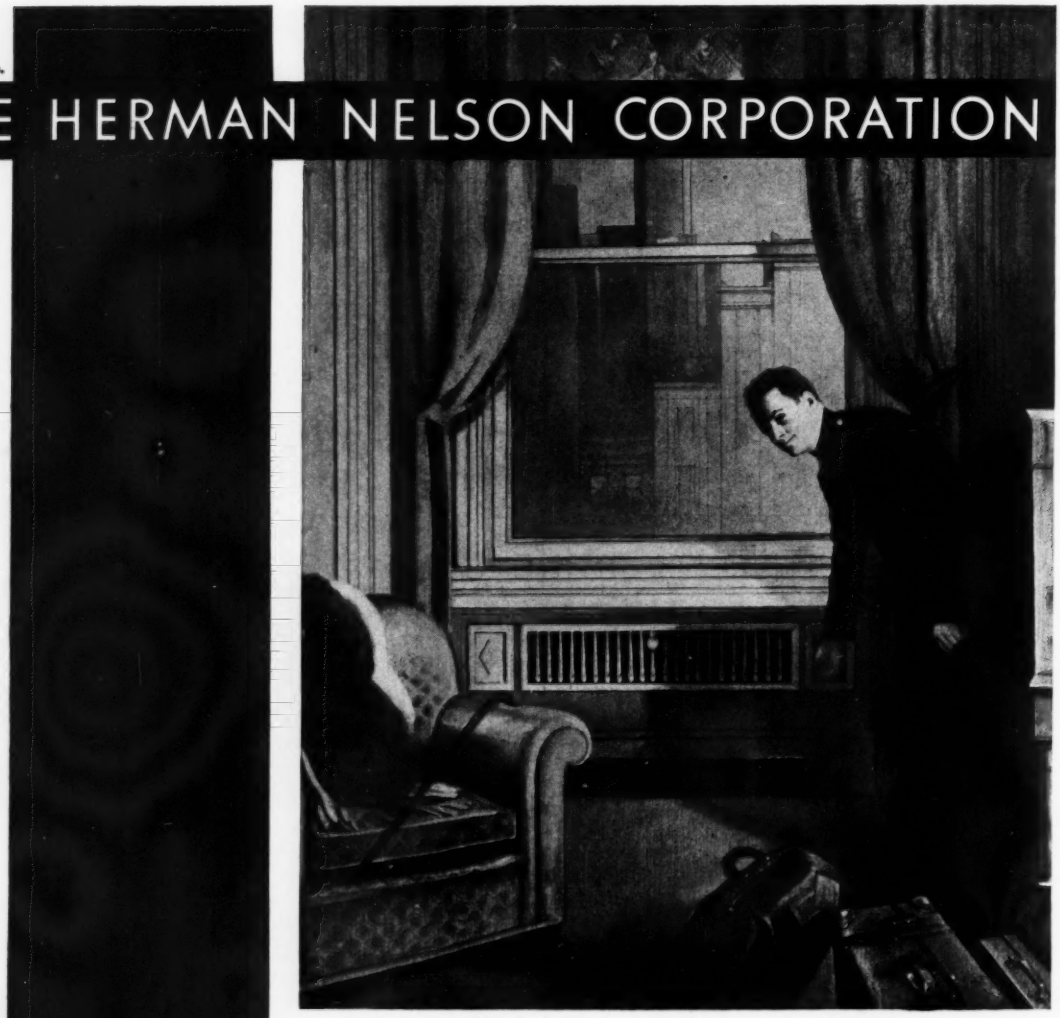
Revere COPPER BRASS Products

Baltimore *Division, Baltimore, Md.* Michigan *Division, Detroit, Mich.* Higgins *Division, Detroit, Mich.*
Dallas *Division, Chicago, Ill.* Taunton-New Bedford *Division, Taunton, Mass.* Rome *Division, Rome, N. Y.*

EXECUTIVE OFFICES: NEW YORK CITY
GENERAL OFFICES: ROME, N. Y.

© 1931
T. H. N. Corp.

THE HERMAN NELSON CORPORATION



HERMAN NELSON *Invisible* RADIATOR

The stronger your competition, the more you need the Herman Nelson Invisible Radiator to help you get profitable quality business.

Builders and architects are swinging to this radiator, first, because it fits within the wall—completely out of sight and out of the way; second, because it is built to give effective, worry-free heating results.

You will find this light, compact heating unit easy to install. It is remarkably small and light—comes completely equipped with a sturdy scientifically designed steel case, graduating damper and choice of six authentic outlet grilles. For larger and taller buildings, where access to control valves is required, a special removable panel is provided.

Start now to build up a more profitable business on concealed heating. Write for our engineering data book and complete information.

A HERMAN NELSON PRODUCT

The Herman Nelson Corporation are makers of the *Univent System of Ventilation*, the *Her-Nel-Co System of Ventilation*, the *Herman Nelson Invisible Radiator*, the *Herman Nelson hiJet Heater*, and other heating and ventilating equipment.

Factory at Moline, Illinois · ***Sales and Service Offices in all Principal Cities***

BELFAST, ME.	SCRANTON	GRAND RAPIDS	DES MOINES	MIAMI	SAN FRANCISCO
BOSTON	KINGSTON, PA.	SAGINAW, MICH.	MILWAUKEE	DALLAS	LOS ANGELES
SPRINGFIELD, MASS.	HARRISBURG	DETROIT	APPLETON, WIS.	OMAHA	VANCOUVER, B. C.
PROVIDENCE, R. I.	PITTSBURGH	CLEVELAND	MINNEAPOLIS	EMPORIA, KAN.	TORONTO, ONT
HARTFORD, CONN.	JOHNSTOWN, PA.	COLUMBUS	DULUTH	KANSAS CITY	WINNIPEG, MAN
NEW YORK CITY	ALLENTOWN, PA.	CINCINNATI	ST. LOUIS	DENVER	CALCARY, ALTA.
SYRACUSE	ERIE, PA.	TOLEDO	BIRMINGHAM	SALT LAKE CITY	LONDON
ALBANY	WHEELING, W. VA.	INDIANAPOLIS	NASHVILLE	BUTTE, MONT	OSLO
ROCHESTER	WASHINGTON, D. C.	EVANSVILLE, IND.	CHATTANOOGA	SPOKANE	MELBOURNE
BUFFALO	BALTIMORE, MD.	CHICAGO	MEMPHIS	PORTLAND, ORE	TOKIO, OSAKA
PHILADELPHIA	CHARLOTTE, N. C.	PEORIA, ILL.	NEW ORLEANS	SEATTLE	BUENOS AIRES

You whose children have food this Yuletide

Give unto those who are *starving*

Scent of holly in the air . . . . a gay tree brimming with holiday blessings . . . . perfume from the kitchen where a generous Christmas dinner is being readied by you and yours . . . . and a mother, her happy, healthy children in her arms, looking out upon the serene night, in which celestial candles gleam and glitter. Home . . . . sanctuary . . . . gifts . . . . food . . . . protection.

During good times or bad, the average American home manages to approach the Yuletide season with joyous anticipation. And the sympathetic urge to help those who are less fortunate, is, always, a national characteristic.

But today . . . . the need for "having a heart" is more tragic, more urgent, more terrifyingly necessary, than ever in the world's history. American children and children of many nations, are STARVING. As the facts accumulate, this situation might well cause us to shudder with horror . . . . "Starving Children" . . . . not a pleasant thought!

What a beautiful thing it will be for YOU, this Yuletide, to give, if but modestly, to these tiny sufferers to whom even a crust of dry bread will come as a blessing. "GOLDEN RULE WEEK" is a constructive opportunity in this direction. The long arm of its vast charity reaches out and finds these hungry youngsters . . . . feeds them. You will do YOUR share, we know.

BOARD OF TRUSTEES

GEORGE A. BALL	WILLIAM A. PRENDERGAST
CLIFFORD W. BARNES	FLEMING H. REVELL
S. PARKES CADMAN	LELAND REX ROBINSON
ROBERT J. CALDWELL	OLIVER J. SANDS
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JOHN R. MOTT	CHARLES L. WHITE
MRS. EDGERTON PARSONS	CURTIS D. WILBUR
DANIEL A. POLING	MARY E. WOOLEY

"GOLDEN RULE WEEK"

DECEMBER 13—20

The donor may designate his gift for any philanthropy in which he is especially interested and one hundred cents of every dollar will go as designated—none for expenses.

Undesignated gifts will be allocated by the Survey Committee after careful investigation to meet the most acute needs through the most efficient agencies.

THE GOLDEN RULE FOUNDATION
Lincoln Building, 60 E. 42 St.
New York, N. Y.

Without obligation on my part, kindly send me your booklet, "The Golden Rule, A. D. 1931," giving information and suggestions concerning Golden Rule Week.

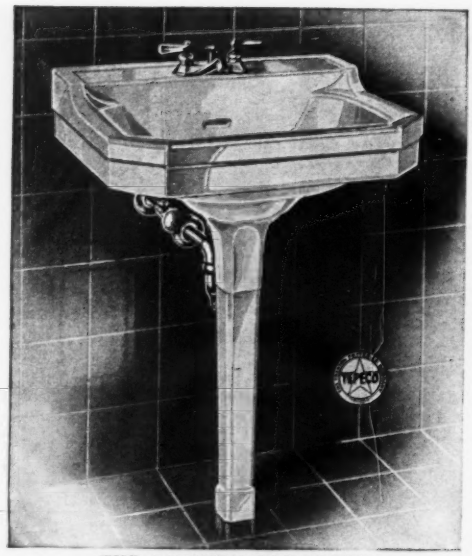
NAME .....

ADDRESS .....

DECEMBER 13—20

THIS SPACE IS CONTRIBUTED BY

DOMESTIC ENGINEERING



THE CARLTON LAVATORY
Plate No. 2192-T

Beauty of line is but one feature of this new

TE-PE-CO LAVATORY

ALTHOUGH measuring but 24″ by 21″ overall, this lavatory has an extra large bowl area—19½″ by 12½″—far more spacious than is usually the case in much larger size lavatories. The elevated shelf and compact type of fitting provide a greater expanse of slab space than ordinarily found. They also prevent any possibility of back syphonage. Add to these advantages — the distinguished design — the durability — the sanitary qualities for which Te-Pe-Co products are famous. Then study the photograph and you'll agree that the recognition already accorded this newest of Te-Pe-Co Lavatories is well deserved.

Our Guarantee

OUR GUARANTEE — We make but one grade of ware — the best that can be produced—and sell it at reasonable prices. We sell no seconds or culls. Our ware is guaranteed to be equal in quality and durability to any sanitary ware made in the world. The Te-pe-co trade mark is found on all goods manufactured by us and is your guarantee that you have received that for which you have paid.

THE TRENTON POTTERIES COMPANY

Trenton, New Jersey, U. S. A.

National Showrooms:

New York City:
101 Park Ave., Entrance on 41st St.

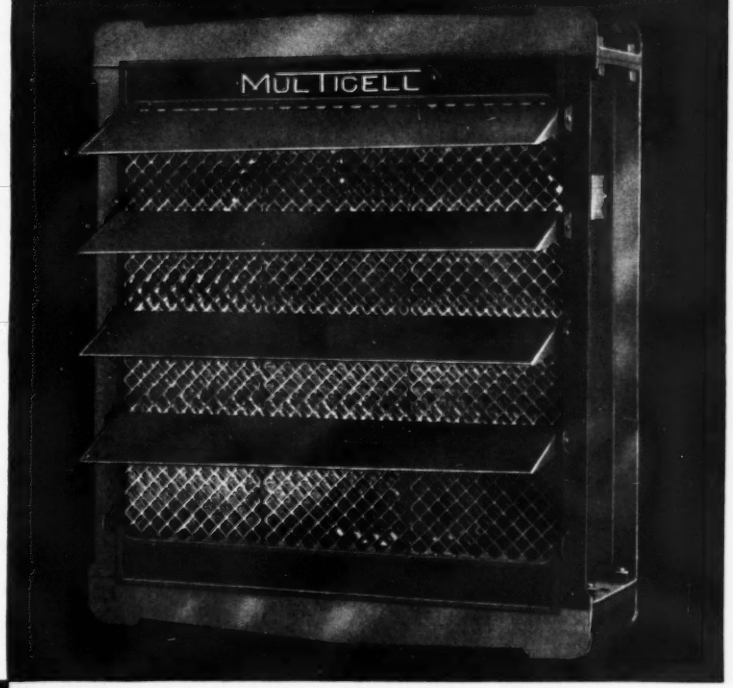
Philadelphia:
Architects' Building, 17th & Sansom Sts.

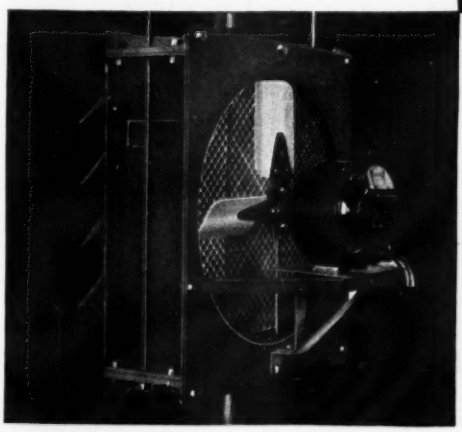
Branch Offices:
Boston and Chicago:
Export Office: 115 Broad St., New York City

YOU ADD BOTH TO YOUR PROFIT AND YOUR PRESTIGE . . .

every time you install

MULTICELL UNIT HEATERS





MULTICELL is superior in 6 different ways

1. One piece seamless copper construction means 100% prime heating surface.
2. Oversize waterways lower steam resistance and assure equal pressure at inlet and outlet.
3. Smooth surface spells absence from clogging even in dust and lint-laden air.
4. Simple, sturdy construction. No slip joints, diaphragms or gaskets. Expansion & contraction self-absorbed. No piping strain.
5. Individual sections removable without service interruptions.
6. Absolute guarantee against leaks and failures due to piping strains.

THE original profit you make on a MULTICELL UNIT HEATER installation is far from your total gain. The efficient manner in which it functions reflects to your advantage. Customer satisfaction means word-of-mouth advertising . . . more prospects . . . more sales . . . more profits . . . a growing reputation as a heating contractor whose recommendations are highly dependable.

Study MULTICELL'S 6 point superiority and you will readily realize why their performance is permanently satisfying. They are probably the most economical unit heater on the market both from a standpoint of fuel savings and freedom from maintenance expense. MULTICELL UNIT HEATERS are sturdily built, self cleaning, the only heating surface completely constructed from one-piece seamless copper. There are no fins to collect dust and lint yet withal, MULTICELL drives a steady, even heat to every square inch of the area involved.

MULTICELL UNIT HEATERS can add both to your prestige and your profit. If you base your success on the success of your installations, be sure you recommend and install MULTICELL UNIT HEATERS. Our descriptive catalog is ready now. The coupon is for your convenience.

MULTICELL RADIATOR CORPORATION

LOCKPORT, N. Y.

MULTICELL RADIATOR CORP., LOCKPORT, N. Y.
Send me your Multicell Unit Heater Catalog

Name _____

Firm _____

Address _____

MODERN HEATING MAKES MODERN HOMES

"In My Windows, In My Store, On My Truck and Automobile"

"These attractive orange window posters are in my windows, in my store and on my truck and automobile right along. They're bound to make people think if you use them often enough and if you keep right on pushing them.

"The oftener you use them, the oftener do you remind people that 'the difference between an old house and a new one is plumbing' and that 'modern heating makes modern homes'.

"I got a supply of them and I change them once a week. I'm going to keep right on using them all the time because they express sales facts that will help a lot in getting people to thinking about buying new plumbing and heating."

Order a supply of these posters today! Send stamps for the amount you want. We'll ship them at once.

»

Here are the Low Prices:

100 posters (50 plumbing and 50 heating)	$1.00
50 posters (25 plumbing and 25 heating)	.50
20 posters (10 plumbing and 10 heating)	.20
10 posters (5 plumbing and 5 heating)	.10

(Actual size 25x4½ inches)

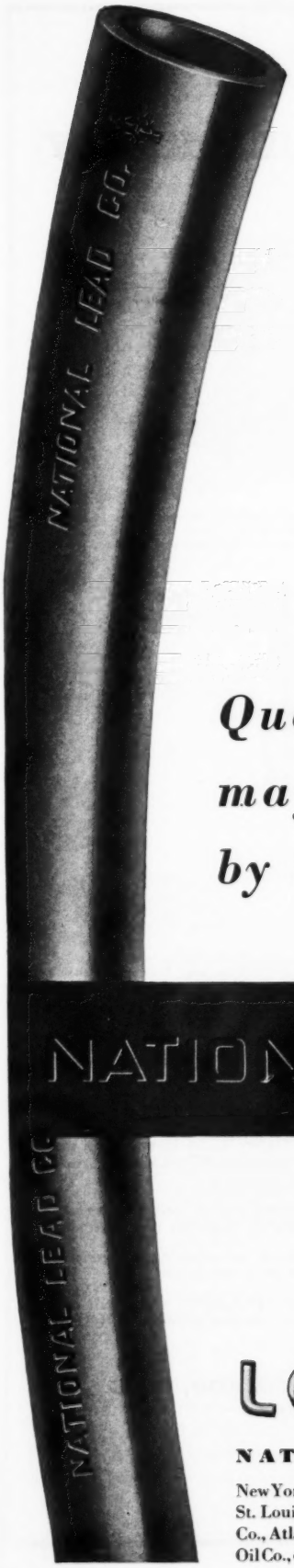
Join this drive for remodeling business. Get these posters. Put them up. Use them. Order them today!

Ask About the Remodeling Charts!

«

DOMESTIC ENGINEERING
1900 Prairie Avenue
CHICAGO :: ILLINOIS

THE DIFFERENCE BETWEEN AN OLD HOUSE AND A NEW ONE IS PLUMBING!



MEMBER OF LEAD INDUSTRIES ASSOCIATION — RELY ON LEAD

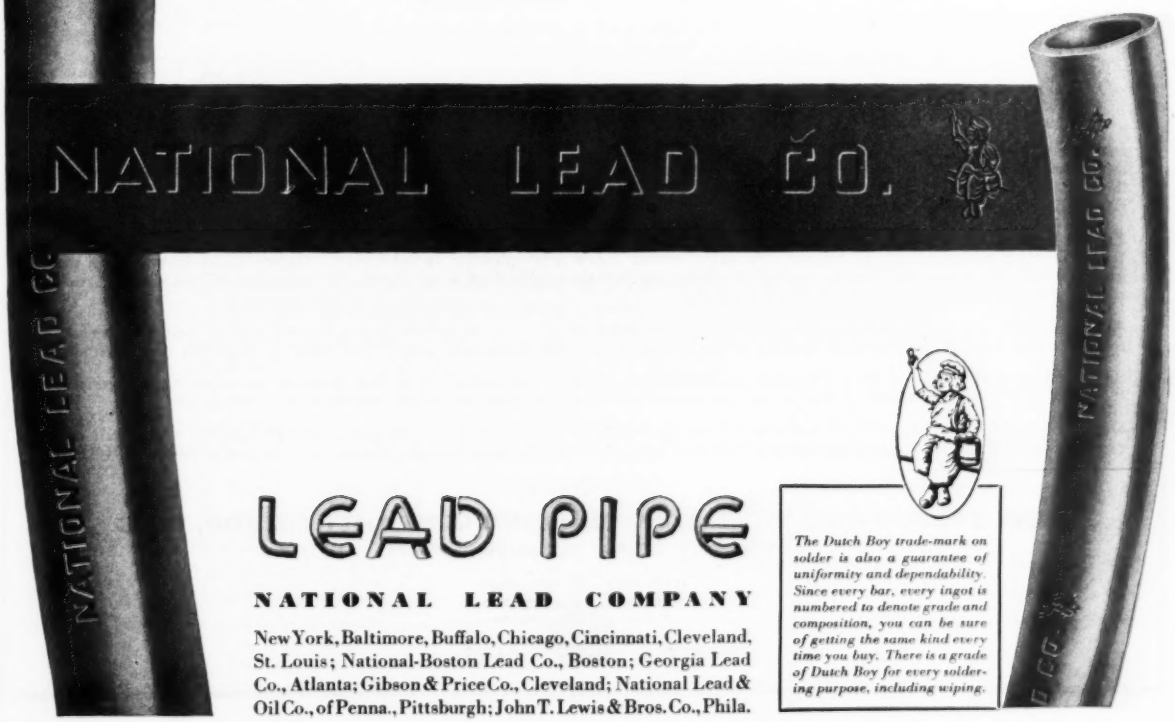
Quality Lead Pipe may be identified by its quality mark

NEW times — new buying habits! . . . The Romans, thousands of years ago, used lead pipe, but they had no way to easily identify high quality.

Today's way of buying high quality lead pipe is to look for the Dutch Boy trade-mark and the name of the National Lead Co. — stamped every few inches on the product.

This quality mark is important to every buyer of lead pipe. It assures high quality . . . proper wall thickness . . . correct weight per foot.

Buy lead pipe the modern way. Look for the Dutch Boy trade-mark and the National Lead Co. name.



LEAD PIPE

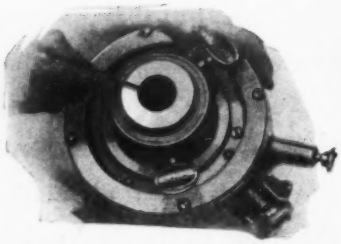
NATIONAL LEAD COMPANY

New York, Baltimore, Buffalo, Chicago, Cincinnati, Cleveland, St. Louis; National-Boston Lead Co., Boston; Georgia Lead Co., Atlanta; Gibson & Price Co., Cleveland; National Lead & Oil Co., of Penna., Pittsburgh; John T. Lewis & Bros. Co., Phila.

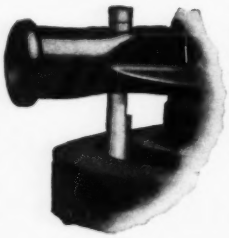
The Dutch Boy trade-mark on solder is also a guarantee of uniformity and dependability. Since every bar, every ingot is numbered to denote grade and composition, you can be sure of getting the same kind every time you buy. There is a grade of Dutch Boy for every soldering purpose, including wiping.

MR. PIPE TOOL USER—

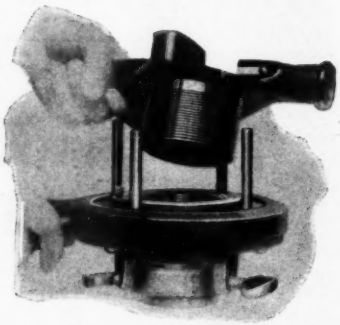
HERE ARE FACTS YOU SHOULD KNOW



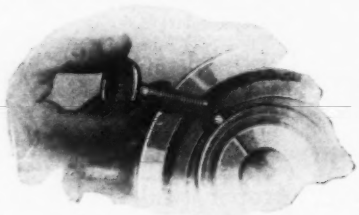
Typical "Toledo" convenience. This mark shows the only thumb screw to be unscrewed to remove the bushings.



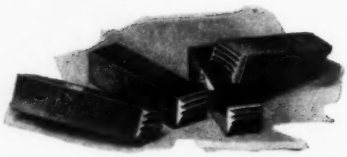
Long, line-marked taper pins, riveted securely in place, assures smooth, perfect taper threads, and permit instant adjustment for over or under as well as standard threads.



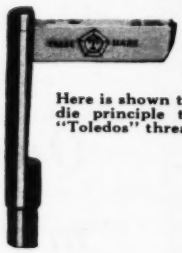
The lead screw is sharp, clean cut and perfectly fitted. Good for thousands of threads and years of service.



Oversize thumb screws are strong beyond all need. The easiest way of fastening the tool to the pipe.



The original easy-cutting "Toledo" Dies made of the finest tool steel perfectly hardened.



Here is shown the receding die principle that makes "Toledos" thread so easily.

This trade-mark on the box assures you a genuine "Toledo."

This trade-mark on the tool name plate is your protection. Insist on it.

Only genuine "Toledo" Dies bear this trade-mark, and the 2" Dies are made of High Speed Tool Steel.

YOU HAVE—

for years known genuine "TOLEDO" trade-marked tools as the finest, easiest operating, most efficient and satisfactory tools for threading pipe. The No. 1 and No. 1A for threading 1" to 2" and the No. 2 for threading 2½" to 4" pipe, have never been equalled, and thousands upon thousands of experienced operators will vouch for their superior efficiency.

For 30 years "TOLEDO" has faced criticisms of competition and adhered to mechanical principles that assured the operator easier cutting, longer life dies, better work and greater satisfaction. Other tools have come and gone unable to meet the hard, exacting, daily service demanded of such tools, yet genuine "TOLEDO" trade-marked tools continue the recognized leaders.

And now, the sincerest and most flattering compliment of all . . . as others, long critics, now admit the correctness of "TOLEDO'S" 30 years' design by attempting to imitate in various ways "TOLEDO'S" superior construction.

Experience is not gained in a day and imitations cannot be perfected in a day, a week, or months, so genuine "TOLEDOS", backed by 30 years' experience, cannot be duplicated in a few months or a few years.

Don't be misled by the critic's claims and exaggerated statements, because genuine "TOLEDO" tools will continue to give you the same superior service you have learned to expect from them, and at the LOWEST PRICES.

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SERVICE PLUS

Our Industry

THOUSANDS MEET TO AID HOME BUILDING

By R. V. SAWHILL

Washington, D. C., Dec. 5.—Efforts to stimulate the building of homes were brought to a focus here in the past three days. Thousands of contractors, architects, bankers, club women and civic leaders responded to the invitation of President Hoover and attended the President's Conference on Home Building and Home Ownership.

While the problem of financing, as the first essential to be provided, dominated the discussions, intensive study was given also to every phase of home construction, ranging all the way from city planning to interior decoration.

Among the 31 committees which assembled data for discussion, readers of DOMESTIC ENGINEERING will find particular interest in the report of the committee on fundamental equipment. This took up heating, ventilating, air conditioning, plumbing, sanitation, refrigeration and electric wiring. Its report provides a complete summary as of today of the progress made in those fields, the various facilities which are now available for servicing the home, and provides information on relative costs.

Prof. A. C. Willard of the University of Illinois, Prof. Philip Drinker of Harvard University, W. H. Driscoll, vice president of the Thompson-Starrett Co., and Perry West, consulting engineer of Newark, N. J., assembled the data on heating, ventilating and air conditioning. It was limited to a small home and provides builders and contractors with disinterested information on relative installation and operation costs of and the operating characteristics and limitations of available equipment for heating, ventilation and air conditioning. The report is unusually complete, and will be presented more fully in coming issues of DOMESTIC ENGINEERING.

The report on plumbing and sanitation was prepared by A. E. Hansen, sanitary engineer of New York, E. F. Carter of the department of labor, Raleigh, N. C., W. H. Driscoll, and J. L. Murphy, chairman of the standardization committee of the National Association of Master Plumbers. Every phase of plumbing and sanitation for small homes, both urban and rural, is discussed, as well as fire protection, gas supply, gas machines, bottled gas and garage plumbing. Selections from this unusually complete report will also be given readers of DOMESTIC ENGINEERING in coming issues.

The conference has drawn many leaders of the plumbing and heating industry to Washington, including George H. Drake and Walter Klie, respectively past presidents of the national plumbing and heating contractors' associations.

President Hoover's interest in the subject of stimulating home building was shown in his address to the delegates at the opening session and in a reception to them at the White House yesterday afternoon.

The Fundamentals of Air

Below is shown an air conditioned home which is located in a suburb of Chicago

AIR conditioning is a broad term and may be defined as the specific regulation of any particular quality of air. If applied to air in the space occupied by human beings, it usually refers to those qualities which affect comfort and health. In an industry, it usually means the regulation of one or more of the properties of air to bring about a state or condition most favorable to some manufacturing process. Air may be conditioned with specific reference to any of its qualities, depending upon the need.

It must not be implied that ideal air conditions in the home are different from those required in other places where comfort and health are at stake, but it is true that the home, where most people spend from one-third to two-thirds of their lives, has been the last place to receive scientific study and attention.

Air conditioning was first applied for comfort when prehistoric man learned to build a fire to warm the air in his cave. This was the most urgent requirement for his comfort, and here progress stopped for ages, the main thought being toward better methods of supplying the heat.

The first scientific air conditioning on a commercial scale was in the industries. Here it was learned that specific air qualities were required in order to get the best results. Good examples of industries requiring special air treatment are those served by textile mills, printing plants, bakeries, candy shops, tobacco factories, film factories, etc. In some of these, accurately controlled temperature is required; in others, humidity is the important factor, and, in others, dust must be thoroughly eliminated. It is not difficult to find scores of industries in which accurate control of some one or more properties of the air is a vital factor in the quality of the product.

Closely paralleling industrial air conditioning came the so-called school room ventilation. Starting on the basis of a mere volume requirement, the ventilation of schools has passed through many stages. Science and research have shown that comfort and health are based not only upon one but upon several qualities of the air. As these principles have been discovered, they have been gradually accepted by those responsible for the design and opera-

Conditioning in the Home

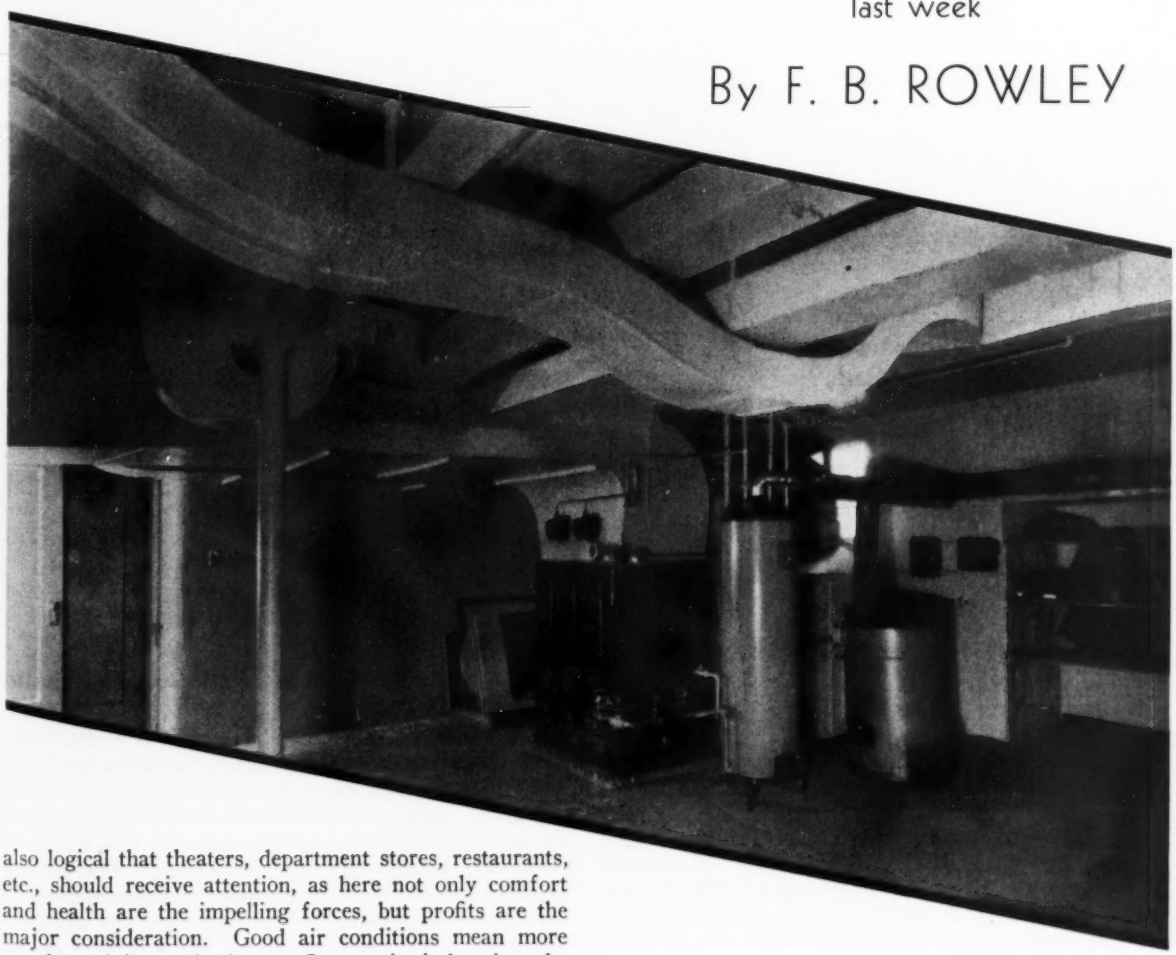
The writer of this article is first vice president of the American Society of Heating and Ventilating Engineers and is the director of the experimental engineering laboratories of the University of Minnesota. He prepared this very comprehensive material for presentation at the convention of the National Warm Air Heating Association which was held in Washington last week

By F. B. ROWLEY

tion of the systems until today the list of requirements which are definitely accepted includes temperature, humidity, air motion, air distribution, freedom from dust, bacteria, odors, and poisonous gases. Other qualities crowding for recognition are sound disturbances, ionization and the like.

Other fields in which the development of air conditioning for comfort and health closely followed, and, in many cases, surpassed that of the public schools, were the theater, the department store, restaurants, and other public and semi-public buildings.

It is quite natural that special attention should be given to comfort and health in our schools. Everybody is concerned about the well-being of our youth. It is also logical that theaters, department stores, restaurants, etc., should receive attention, as here not only comfort and health are the impelling forces, but profits are the major consideration. Good air conditions mean more people and better business. In certain industries, the finished products have settled the argument. In the home, the condition has been quite different; the main impetus has been the individual desire. There has been no unified public demand, no apparent profit in dollars and cents to be considered. Until recently, air condi-



This basement view of the home shown in the opposite illustration indicates the amount of piping and duct work involved

tioning in the home, for the most part, has had to wait and follow the lead set by public institutions. That delay now seems to have been ended and, in the near future, air conditioning in the home seems sure to become a leading public interest, and with it a new industry will appear.

What Does Air Conditioning Include?

Consider those properties of the air which it may be desirable to control in the home. In the main, these are: temperature, humidity, air motion, air distribution, the elimination of dust, odors, and, in special cases, perhaps, bacteria and other objectionable impurities. No one of these qualities can be separated from the others and called ventilation any more than one article of food can be used as a balanced diet. The foremost in importance is, however, temperature and its regulation.

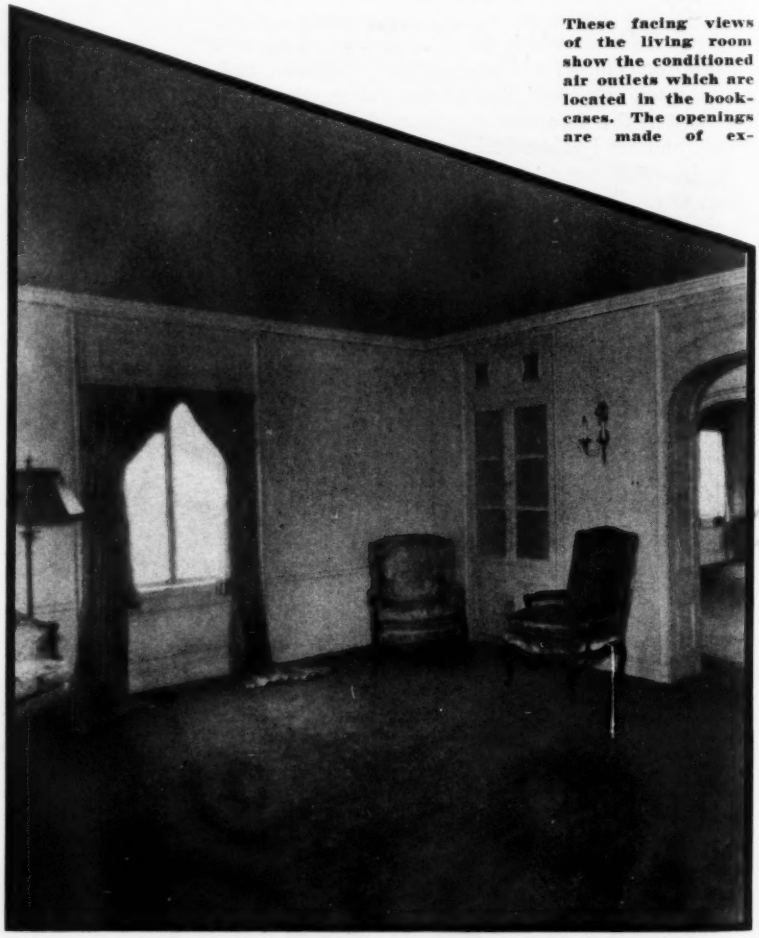
A human being is virtually a power plant, generating heat at the rate of from 400 to 600 Btu. per hour. Some of this is converted into work, but most of it must be dissipated to the air and to surrounding objects. The body is equipped with a delicate heat-regulating mechanism which controls its temperature at 98.6 deg. Fahr., but the operation of this control can be interfered with or broken down entirely if proper air conditions are not maintained.

How Does Air Conditioning Affect the Temperature of the Body?

Heat is dissipated to the air by direct contact and by the evaporation of moisture from the surface of the body. It is given to the surrounding objects by direct radiation. The heat given off by direct contact depends upon the air temperature and air velocity over the surface of the skin; that absorbed by evaporation depends not only upon the temperature and air motion, but also upon the amount of moisture or humidity in the air. If air is low in moisture content, it will absorb moisture from the surface of the skin more rapidly and have a greater cooling effect than air of the same temperature which is high in humidity. Also, air in rapid movement over the surface of the body will absorb more heat both by direct convection and by evaporation than air which is still or stagnant. Every pound of water absorbed from the surface of the body must be furnished with 970 Btu.; thus the evaporation of moisture is a very effective cooling process.

The Three Temperatures in Ventilation

For ventilation, there are actually three different temperatures to be considered: 1st, the dry bulb temperature; 2nd, the wet bulb temperature, and 3d, the effective or apparent air temperature. The dry bulb temperature is the one most commonly used and is obtained from an ordinary thermometer placed in the air of the room. The wet bulb temperature is lower than the dry bulb temperature and is obtained by surrounding the bulb of an ordinary thermometer with a water-soaked wick and circulating the air of the room over this wick. Water is evaporated by the moving air which lowers the temperature of the thermometer bulb. At 70 deg. Fahr. air will hold 1.6 per cent of its weight in water vapor. This is something over a quart for the average sized room. If the full amount of moisture is present, there will be no evaporation from the wick and the wet bulb temperature will be equal to the dry bulb reading. The amount by which the wet bulb temperature is lowered depends upon the relative humidity or the amount of moisture in the air. If this humidity is low, the wet bulb depression is greater than when the humidity is high.

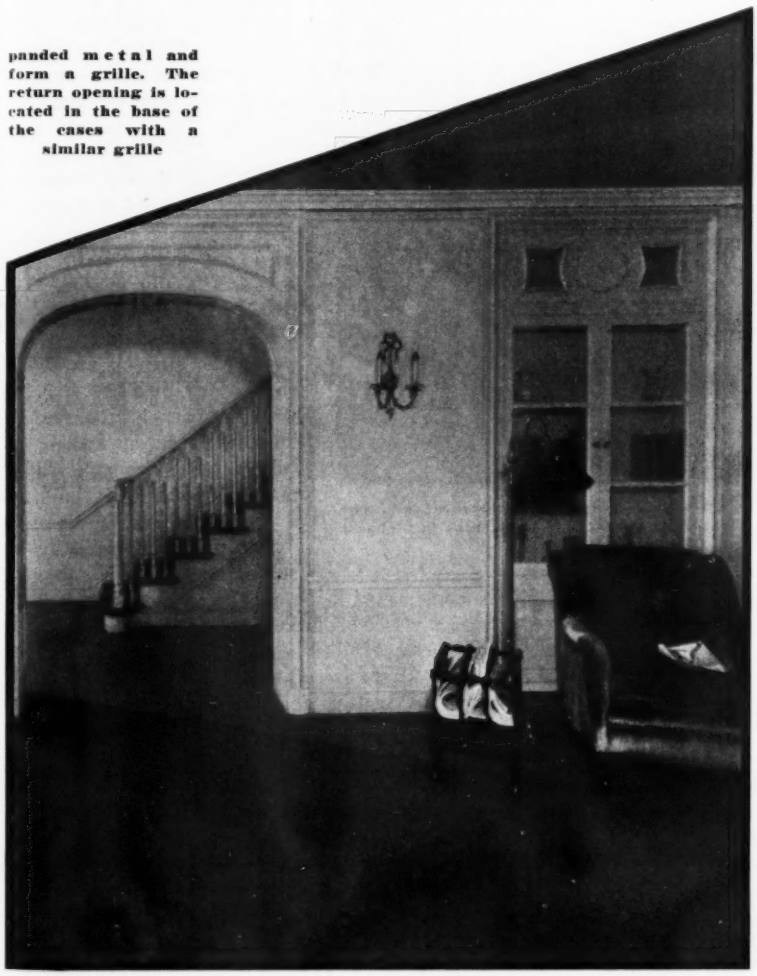


These facing views of the living room show the conditioned air outlets which are located in the bookcases. The openings are made of ex-

The effective temperature is neither the wet nor dry bulb temperature, but somewhere between the two, depending upon the amount of moisture in the air and its motion. If the skin were entirely dry, the effective

temperature would be more nearly equal to the dry bulb temperature. If, on the other hand, the body were wrapped with a wet sheet, the effective temperature would be more nearly equal to the wet bulb temperature. Consider air at 72 deg. Fahr. and 10 per cent relative humidity. If this air were saturated with moisture, its dry bulb temperature could be reduced to 65 deg. Fahr. without changing the feeling of comfort or, in other words, the effective temperature would be the same for the 72 deg. Fahr. air with 10 deg. of saturation or for the 65 deg. Fahr. air saturated with moisture. Considering the problem from another angle, if air at 70 deg. Fahr. dry bulb temperature were saturated with moisture, its effective temperature would be 70 deg. Fahr. If 70 per cent of this moisture were removed from the air, leaving a relative humidity of 30 per cent with no change in dry bulb temperature, its effective temperature would drop to 65 deg. Fahr., although the dry bulb temperature would still be 70 deg. Fahr. Thus a cooling effect or a heating effect can be obtained by changing the relative humidity without making any change in the dry bulb temperature of the air. The body is a thermometer in that it senses the degree of heat. It measures temperature both by the actual temperature of the surrounding air and objects and by the moisture evaporated from the skin. The temperature felt by the body is the effective temperature which is somewhere between the wet and dry bulb readings.

From the above, it is evident that humidity is a direct factor in determining the comfortable temperature of the surrounding air. Its relations to dry bulb temperature and air motion have been rather definitely determined by the research work of the American Society of Heating and Ventilating Engineers carried on at the Bureau of Mines Laboratory in Pittsburgh. Relative humidity also bears a relation to health, and, although this relation has not been as definitely established as has been the relation to comfort, some place between 40 per cent and 60 per cent seems to be accepted as the optimum relative humidity.



panded metal and form a grille. The return opening is located in the base of the cases with a similar grille

Why Air in Homes is Dry in Winter

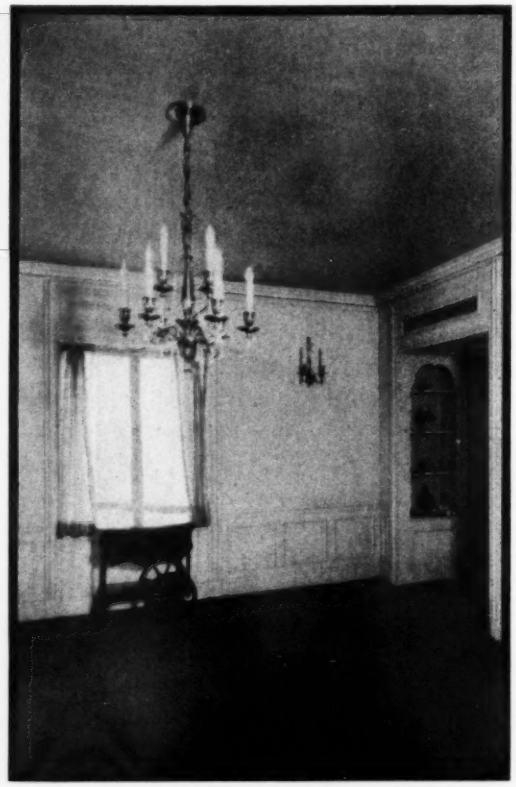
Everybody knows that the air over the Sahara Desert is dry, although few people realize that the air in many of our homes is even drier. If, on a zero day, the outside air which may be saturated with moisture is brought into the house and heated up to 70 deg., its capacity for moisture is so greatly increased that its relative humidity will be about 6 per cent. Such air must be overheated in order to make up for the evaporation from the surface of the cooling effect due to the high rate of body. Air of these qualities is excellent for industrial processes such as the drying of lumber, but medical authorities state that it is extremely irritating to the nose and throat and the cause of low vitality, colds, and other diseases which follow. Plants and flowers will even wilt and die if left in the dry air which we find in many of our homes.

Factors Which Control Moisture in Air in Homes

The amount of moisture to be expected in the air of a home depends upon several factors such as the condition of the outside air, the amount of air leakage through the structure, and the activities in the home, such as cooking, baking, washing, etc., which give off water vapor. These conditions all vary, but it is safe to say that on a zero day the average home will require from 10 to 15 gallons of additional water.

The Dust Factor in Air Conditioning

The next important condition of air to be considered for the home is that of dust. All air contains more or



Here the conditioned air opening is in the head over the door at the left of the view. This also is inclosed with a grille

less dust; some of it is harmful and some of it is not. Dust from the streets filters into our houses through the cracks around the doors and windows or through any place where air may enter. It is generated within the houses through the ordinary activities.

Dust is made up of all sorts and kinds of particles of organic and inorganic matter.

It floats in the air, settling out at a rate which depends upon its density. Lightweight dust will float in the air for days without separating. If one is in doubt about the dust in the average living room, it is only necessary to observe a beam of sunlight passing through a darkened room. All have observed this and realized that there are millions of particles of dust in the average room in any house.

Health and Dust

The effect of this dust upon health will depend upon the amount and its quality. We inhale these particles of dust and exhale most of them, although an examination of the lungs of people living in smoky districts has shown the tissues to be darkened, due to the soot and carbon deposits. Tests made in large industrial centers have shown that the average person inhales as much as 1½ lb. of dust per year. This, of course, is not all retained in the lungs and it has been difficult to determine the physiological effects. It is a fact, however, that, in many of the industries where such as silica dusts are present, the workers have been seriously affected. It is also true that in manufacturing centers where the air is laden with dust and smoke pneumonia and other diseases of the lungs are more prevalent.

Dust particles have been likened to airplanes carrying millions of germs. Some of them may be harmless, but others certainly are not. It is a recognized fact that dust has no beneficial effect as far as health is concerned, and there are many conditions under which it is positively unhealthy.

Besides the health question, there is the common nuisance of the dust settling upon the furniture, filling the upholstering, draperies, linens, etc. Floating dust causes millions of dollars of expense each year for dry-cleaning alone.

How Dust May Be Removed from Air

Dust in the air is no different from dirt and dust on linen, draperies, and clothing. It can be taken out in the same manner—namely, by washing and dry cleaning. Air washers and filters have been designed which will take out from 95 per cent to 98 per cent of the dust and leave the air comparatively clean and pure. Air is usually washed by passing it through sprays of finely atomized water separating the surplus water by eliminator plates. Air washers may also serve as humidifiers or as coolers if cold water is available. They may be conveniently built as a part of the heating plant.

Air filters are built from several designs. A common variety is constructed of a mat of wool-like material covered with a viscous solution. In passing through this mat, the particles of dust are retained on the viscous coating. Such filters are effective in removing the dust from air and inexpensive forms are now on the market which make them practical as a part of an air conditioning plant.

The removal of bacteria from the air seems to be sufficiently taken care of by the removal of dust. Under special conditions, such as in the case of contagious diseases, this will probably need special consideration. This, however, is a condition which should receive special medical attention and not one to be considered in the design of the average home air conditioning unit. The air washer and the air filter are at present the practical methods of dealing with this phase of the problem.

Odors are taken care of partly by washers and filters, but most efficiently by directing the air flow in such a manner as to prevent the mixture of odors with the general ventilating system.

Summary of Practical Air Conditions

To sum up the practical air conditions required for comfort and health in the home, these are:

1. The physical properties of the air,—temperature, humidity, air motion.
2. Proper air volume and distribution.
3. Air cleanliness or freedom from dust, bacteria, odors, and any other objectionable features.

There is nothing mysterious about the problem, but it

(Continued on Page 106)

Maney J. Feeney, president of the Philadelphia association, and past national secretary, has had experience in negotiations with utilities. He recommends a thorough study of the plan to govern appliance merchandising, worked out by DOMESTIC ENGINEERING

"It is true that the gas companies' desire to build greater gas consumption has led them far into the merchandising field. I believe you have done a thoughtful piece of work. . . ."

To the Editor:

I have read with very great interest the plan to govern merchandising of gas appliances. As you know, I have had a somewhat extended experience in negotiating with our own utility here in Philadelphia, and for the past two years had the opportunity of addressing a meeting of utility executives at the Atlantic City convention.

It is unquestionably true that the gas companies' desire to build greater gas consumption has led them far into the merchandising field, and that in endeavoring by the sale of appliances to build up their load, they have overlooked the important matter of dealer attitude. My own experience is that a straightforward, reasoned statement on the part of the dealers, coupled with a willingness to do a good job of selling, carries weight with the utility.

The action of the National Association of Master Plumbers in accepting the six principles advanced by the American Gas Association was a great forward step. I believe that the action of the utilities in advancing these principles was dictated by the logic of the situation. The utilities have come to see that, with proper dealer co-operation, they can look forward to satisfactory growth in the consumption of gas, and to the elimination of the antagonism their own merchandising activities have aroused.

Granting the general nature of those principles, some such step as DOMESTIC ENGINEERING has taken was necessary in order that a definite program might be drawn up. You seem to have selected the best features of the various plans of co-operation now in effect; and it seems to me that your plan protects the interests of the dealer while being perfectly fair to the utility.

With the coming of natural gas there will be opened up an immensely extended market for the sale of gas appliances. That this market may be sold to the fullest extent, there should be a determined effort on the part of all concerned to work out a program that will put no drag on the selling effort.

For this one reason alone (and for the very good one of promoting general good will towards the utilities) I would heartily recommend a careful study of the DOMESTIC ENGINEERING plan for gas appliance merchandising. It should be studied by every master plumber in the country; it should be studied by manufacturers of appliances, by wholesalers and by gas company presidents.

I believe you have done a thoughtful piece of work as a supplement to the work of the National Association of Master Plumbers in negotiating the agreement on the six principles accepted at Milwaukee, and I hope to see master plumbers all over the country benefit by it.

Maney J. Feeney

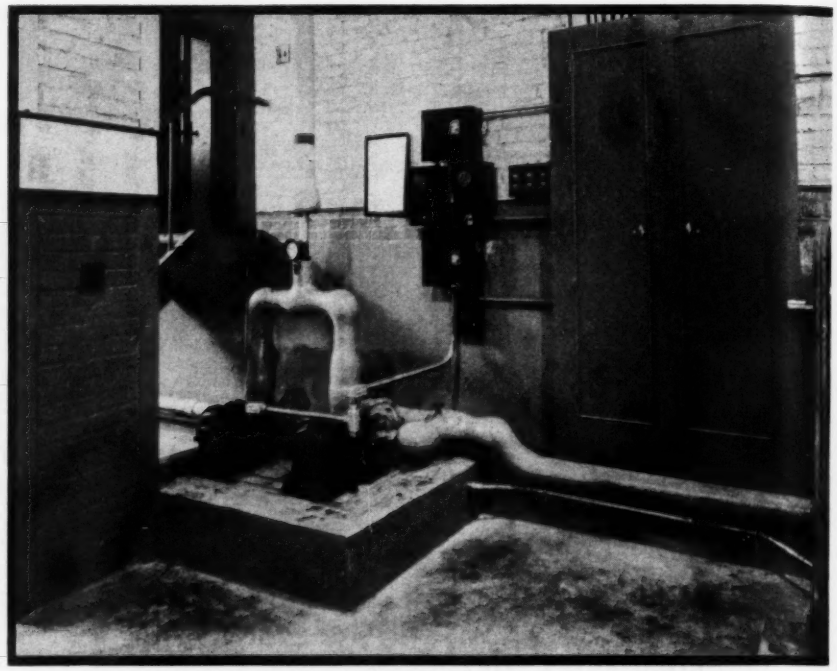


Fig. 1—Here are the circulating pumps which are used for distributing cooled drinking water in a public building located in Connecticut. This view and the view in Fig. 2 are continuous

How a Water Cooling

By R. M. STARBUCK

This article does more than desribe a single installation of drinking water cooling equipment and piping. It goes on to indicate variations which might have been worked into

THE PLUMBING contractor is no longer strictly confined to the sanitary system and to the hot and cold water supply system as the extent of his field of activity. In recent years he has branched out in many directions. The plans and specifications for almost any large building will show that included in the plumbing contract are a number of lines of mechanical equipment which in times past have not been recognized as the legitimate field of the plumbing trade.

Included in the lines that the plumbing contractor is undertaking is the furnishing of cooled water for drinking purposes in office buildings, public and institutional buildings, and the like.

This is generally a problem related to refrigeration, and is presenting one more opportunity for business to the plumbing trade.

In Figs. 1 and 2 is shown the apparatus used in producing and distributing a cooled water supply in a public building in Connecticut. This particular water cooling equipment covers the estimated requirements of 400 people.

Fig. 2 shows the refrigerating plant referred to. The capacity of this particular machine is sufficient to furnish water at 50 deg. Fahr. for 400 persons, and in addition it takes care of the losses of the circulating system, consisting of about 500 ft. of 1-in. pipe, the pipe being insulated with standard 1½-in. thick cork covering.

In the foreground of Fig. 1 is shown the cooling cabinet. This is a tank of about 500 gal. capacity. It is thoroughly insulated with cork 3-in. thick, and this is covered with metal lagging.

The cooling tank is provided with a float valve reg-

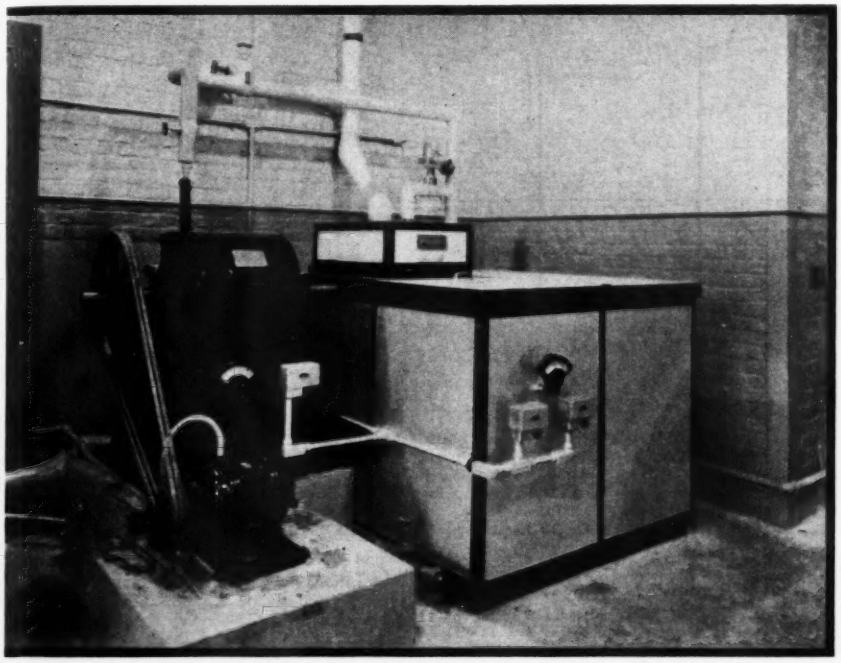


Fig. 2—This shows the cooling or refrigerating apparatus for cooling the drinking water. For a diagrammatic drawing of the system as installed, refer to Fig. 3 at the lower right

System Was Installed

the system if the requirements of the owner and users had called for them. The basic description centers about an installation which has just been completed

ulating the water supply with pipe outlets for connecting to the make-up, the pump suction, the drinking water return and the drainage lines.

Fig. 1 shows the circulating pumps for distributing cooled water to the various drinking fountains, the cooled water made in the apparatus shown in Fig. 2.

If Figs. 1 and 2 can be conceived as matched up to each other, the working parts for the production and distribution of the cooled water can be seen in their proper relation with each other.

The pumps are in duplicate. They are required to circulate the cooled drinking water at the rate of 6 gallons per minute. As the piping is arranged, this water has to be pumped or circulated against the total head of the entire building. This covers six floors.

At the top of the building a balancing tank is used. This tank is insulated with cork.

Fig. 3 shows the general idea of the method of circulating the water that was used in this particular instance.

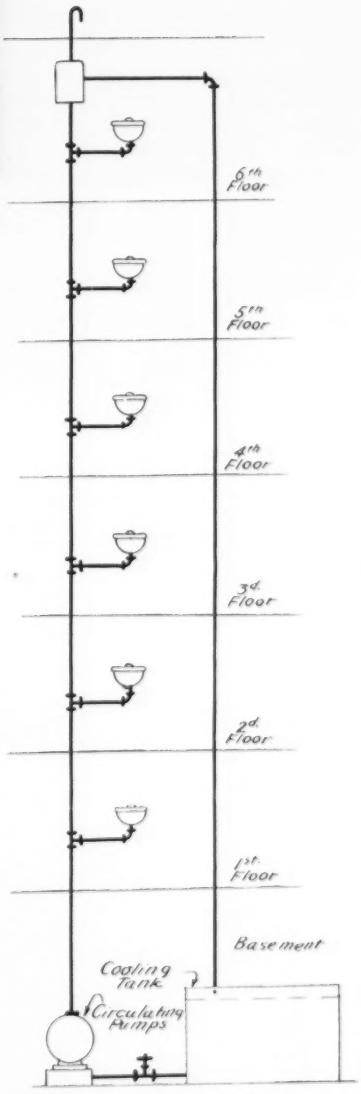


Fig. 3—The drawing shows the outline of the system as it was installed. Note that the piping in the photographs above follow corresponding lines and directions

The pumps take the cooled water from the cooling tank, and circulate it through a 1-in. pipe to the drinking fountains on the various floors. At the top of the system is the tank just mentioned, out of which the return is taken back to the cooling tank.

This might have been piped as indicated in Fig. 4, which shows a method whereby the regular city supply can be furnished at fountains in place of the artificially cooled water. In a large part of the country, the public supply is sufficiently cold to make an entirely satisfactory drinking supply during the cold months, and the use of it during the several months when conditions warrant it, will of course effect an economy in this service.

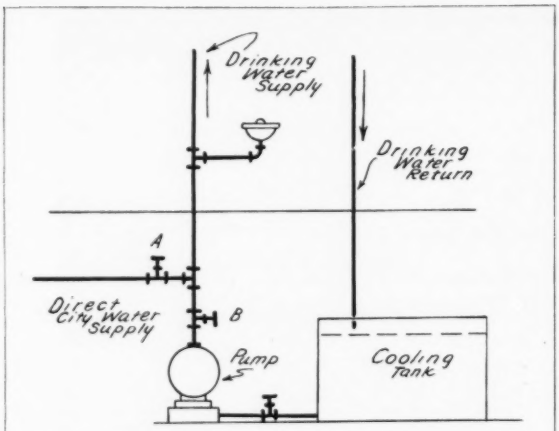


Fig. 4—A modification in the system as installed is indicated here. This provides for circulating city water through the system when the temperature of the raw water is low enough

When the public supply is turned on, valve A is opened and valve B closed. As the water returns to the cooling tank it is allowed to run to waste.

This system is what is called the open system, and may be installed with many modifications.

Fig. 5 is another possibility, showing a layout of the same type of circulating system, with several lines of fountains. In the apparatus here shown, the supply is first taken into a separate float tank. In Fig. 3 the float arrangement is in the cooling tank.

Fig. 6 shows what is called the closed system. In this system the water from the street main is shown passing through a filter, and then taken to the float tank at the top of the system.

The open system is employed when city pressure is too low to raise water above the highest fixtures.

The closed system of water cooling is used when city pressure is sufficient to raise the water to a tank 10 ft. or more above the highest drinking fountains.

What we have thus far said, concerns the supplying of drinking water to the drinking fountains. There is also to be considered the matter of handling the waste from the fountains.

Inasmuch as this is always clean water, the waste from drinking fountains may be handled differently than that from any other plumbing fixture. If desired, it may be discharged indirectly, and that is the way that many plumbing codes prefer to handle it. On the other hand there are plumbing codes which call for drinking fountains to be trapped and vented just as any other plumbing fixture is connected. A third group of plumbing codes allow drinking fountains to be either directly or indirectly connected.

When indirectly connected, the drinking fountain waste is generally discharged over a sink which is trapped and vented.

In the case of the cooled water supply system shown in Figs. 1, 2 and 3, this waste discharges into a sink.

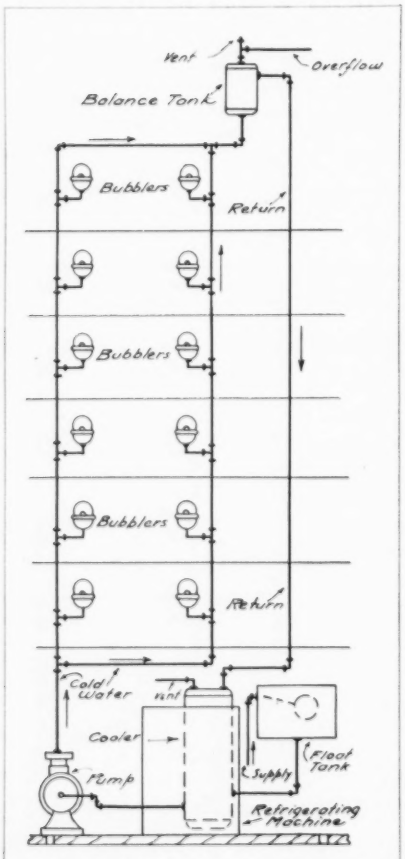


Fig. 5—Here is an open system of drinking water supply for low pressure

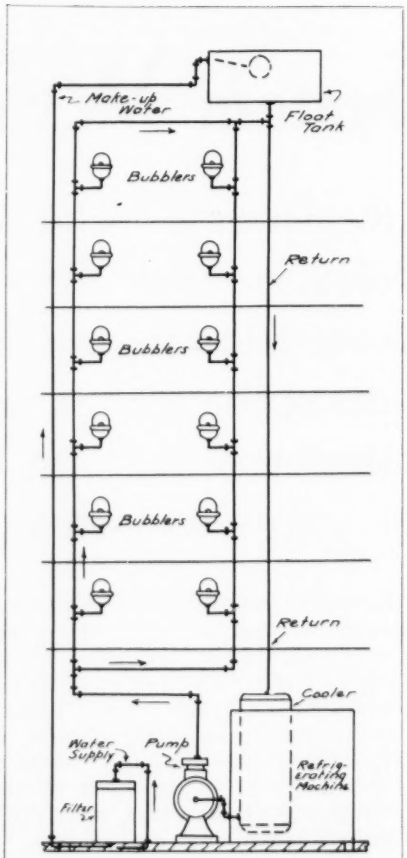


Fig. 6—This closed system of drinking water supply is for high pressure

PLUMBING and HEATING MERCHANDISING

The Market for Home Air Conditioning

as one contractor has surveyed it

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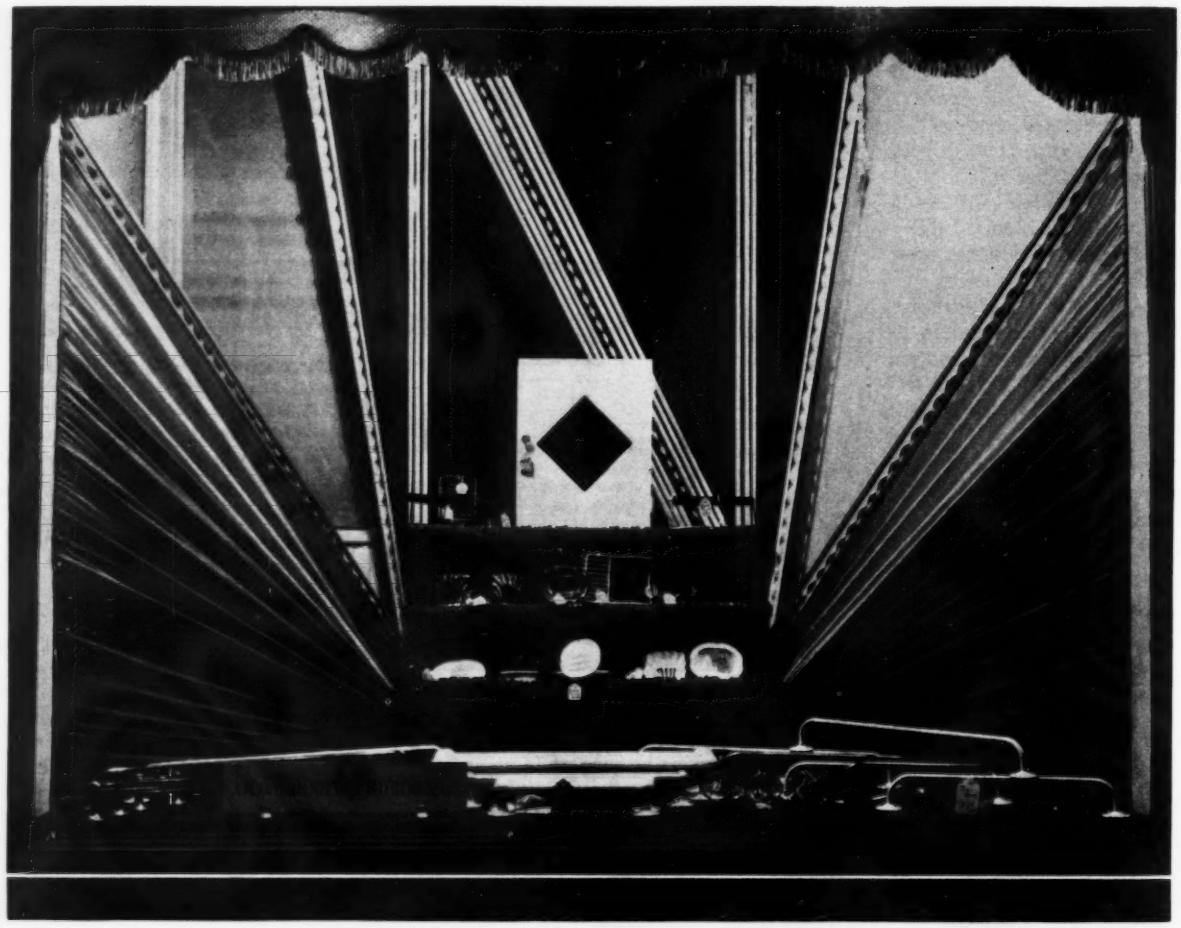
Making Better Sales Opportunities

how a plumbing and heating dealer creates profitable possibilities



Here is a merchandiser's window, pulling for sales

We have previously carried a story about the merchandising efforts of the contractor, one of whose activities is reviewed in the following pages. Here we are interested in his development of

The Market for Home Air Conditioning

"SHOW me any way in which I can make more profits and I'll do a lot of serious thinking about what you've told me and proceed to do those things that will make more profits."

This is what George Winburne of Wichita Falls, Texas, told himself years ago. That is what he told everyone he came in contact with and that is why George Winburne has a more profitable business than any other plumber in the whole of West Texas.

Mr. Winburne studies, he keeps up with all developments and trends. Not so long ago modern ideas answered his challenge. And he proceeded to find a new tune that is even now playing a song of profits on his cash register.

"It should be perfectly obvious to any plumber," he spoke in explaining this to a representative of DOMESTIC ENGINEERING. "Any plumber who cares about his future or has the business sense to consider the profit side of his ledger should know of this.

Studying a New Trend

"But I'll wager there are not many as yet who are making any serious effort to cash in on the new trend

of conditioned air in the home. It's here . . . the business rightfully belongs to the plumbing and heating dealer, but he isn't getting it. Instead, sheet metal men are getting the business.

"But not so in my case. As soon as I saw the trend, and I've always been interested in heating, I proceeded to find out the how and why and to make profits from it.

"The first changes I made resulted from a survey that I conducted. My business judgment told me that I was letting a lot of profit slip by in not getting acquainted with air conditioned heating. So I sought all the information I could find and when the industry finally developed the electric fan principle I realized that the time had come.

"Conditioned air not only now does the job cheaper and more effectively than any other kind of heating but it offers wide profits for the contractor who will study it.

"I conducted a survey to determine whether my business hunches were right and to ascertain just how to proceed. I found that for every 240 heating plants in homes of my city, 211 were warm air heating and 29 were steam or hot water. Now all of us in the plumbing and heating field have been actively interested in steam and hot water plants for a number of years. We've believed that nothing could beat them.

"But with these new developments, we must be ready to cope. That survey showed me that, while we in Wichita Falls had secured 29 jobs our rivals were securing 211 that rightfully belonged to us. If that wasn't enough to make me open my eyes nothing would.

Getting Ready to Sell

"So I proceeded to gather information and file it in the form of a business card shown herewith; a card that gave me all the records I needed not only about this condition and for my survey but for getting the service jobs and new jobs of these people as well.

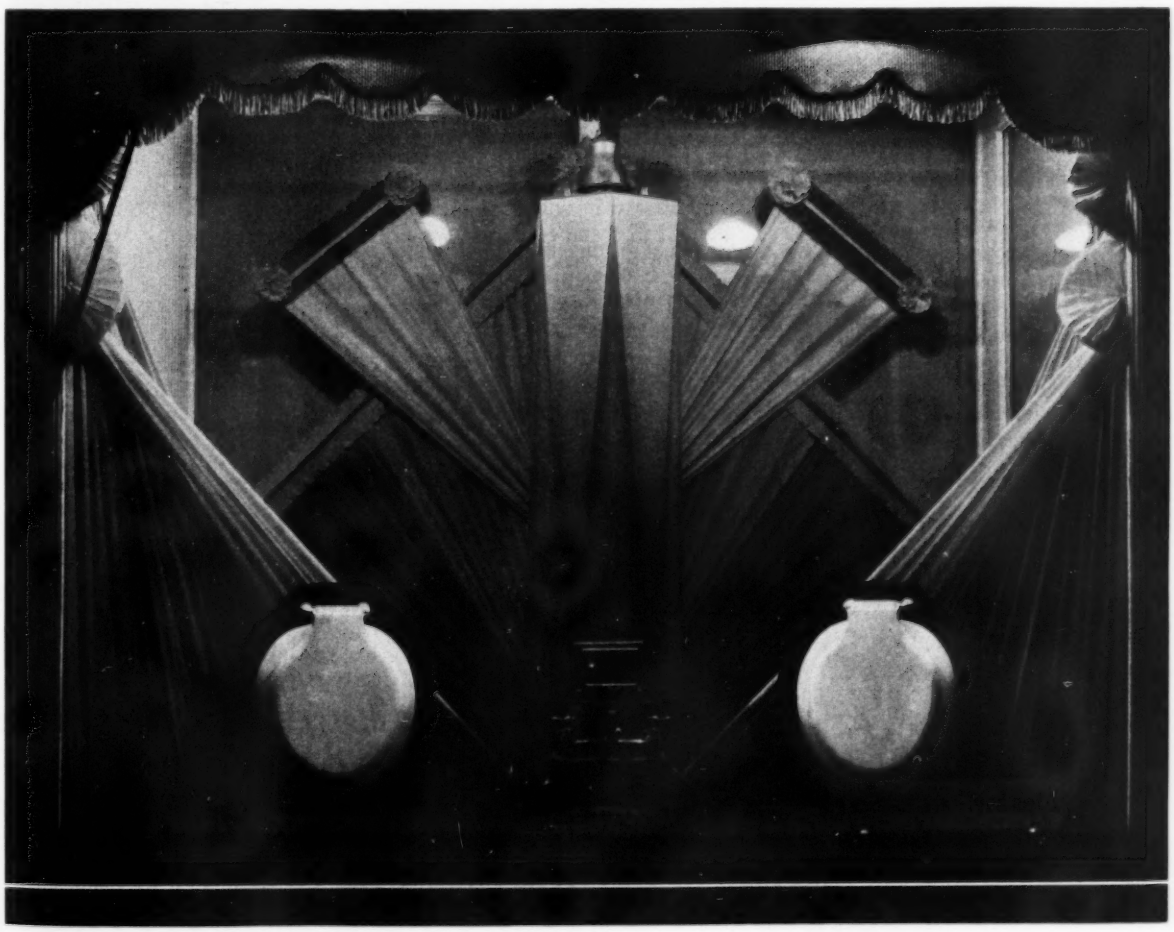
"This information was then used in sales letters. Enclosed with these letters was the card which is shown, printed on a regulation government penny post card.

"Direct mail has done more to build my business than anything else I have ever done. It is the best kind of advertising that a plumber can use. It beats newspaper or radio advertising as the 'first string' effort. Both of the others should be used to support direct mail.

"This little card has brought me plenty of business of every sort and it has opened up heating prospects in a way that I couldn't have opened them any other way.

"First, I find out prospects' interest through the original letters and cards. Then, when the cards come back, I not only have the factory send them detailed literature but I send them some myself.

"This is then followed by a personal call in which I make every effort to explain everything in their



Another window that is attractive and has sales power

At right—A postal card that brought results. Below: Both sides of a prospect card

Wichita Falls, Texas

Date_____

Geo. Winburne Plumbing Co.

Gentlemen:

Without obligation on my part would be pleased to have you call and give me estimate and explain the easy terms on modernizing my plumbing.

Signed_____

Address_____

own language so that they will thoroughly understand what I am trying to do for them.

"That has proven the soundest way I know of for opening up the sale of air conditioned heating equipment to these home owners. It isn't a thing that can be done with a rush and hurry. Such a purchase involves a heavy investment and must be handled with care and time. If you consider this, your chances of selling are much improved."

Mr. Winburne stands back of all of his work. He guarantees it. He preaches safety and health. Those two doctrines have made a success of his plumbing and heating business.

When his new interest and his survey revealed the possibilities of conditioned air equipment selling and service he applied them there. He broadened his institution to take in this modern idea of conditioned air.

It's the Heating Man's Business

Prospects come to him in every way. He takes them out of experience, out of his records, he secures tips from his hundreds of customers that are his friends, he watches newspaper building permit announcements, he aligns himself with building and loan association officers and contractors, and never lets an opportunity slip to put more cash into his cash register.

"This warm air and conditioned air idea is something that every contractor must educate himself to," Mr. Winburne states. "The man who doesn't is letting dollars go to some one else. Why shouldn't the plumber have this business?

"It is logically his . . . it is a new development of the old plans he has been carrying for years . . . the only thing that can possibly hold him back is lack of knowledge of the whole thing. And that is inexcusable.

"Why, the interest my prospects have shown me in this has been all the proof I've needed. They look to us to do this, and the plumbing and heating dealer will have twice as easy a time selling people as any other business man will if he'll educate himself to it and give them what they deserve for their money."

An Interesting Letter

It will no doubt be of interest to our readers to have before them, in addition to this interview, the letter from Mr. Winburne which led DOMESTIC ENGINEERING to send a man to Wichita Falls for a talk with him. The letter follows:

"I have always done more or less residence steam and hot water heating, but if a builder wanted a warm air heating plant I became very indignant right away and wanted no more to do with him if that was the kind of a heating plant he wanted. And that has been true of all the other plumbing and heating contractors in our city and practically all other cities.

"After carefully making a check of all the heating plants in our city I found there were 240, and 211 of them were warm air heating plants. The remaining plants were about equally divided between steam and hot water. It then dawned on me just how much available business I had been driving away from my door. I then and there made up my mind to stop posing as a heating contractor, or a steam and hot water 'fadist,' and learn all the branches of heating. So

FILE NO. 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31

Business Class

NAME

ADDRESS

Write To

Jan.
Feb.
Mar.
April
May
June
July
Aug.
Sept.
Oct.
Nov.
Dec.

SUBJECT

1st Letter Date	Follow-Up Date	Inquiry Date	Answer Date	Misc. Date

Transfer to Live Prospects Sales

Inquiries Future Prospects

The interior of the Winburne store—strong merchandising here

after burning some midnight oil, and spending a little money, I am one plumber who actually knows how to properly install and service warm air heating plants.

"We now go after the higher class of that sort of work and it has helped out materially in keeping up our volume of business.

"Since it is possible now with the use of quiet fans and positive acting humidifiers to warm a home with humid, low temperature air which reminds one of a balmy day in June, and then in the very near future with the aid of an air washer and well of cool water, or mechanical refrigeration, it will be a common thing to cool the house in the summer months with the same air conditioned heating plant."

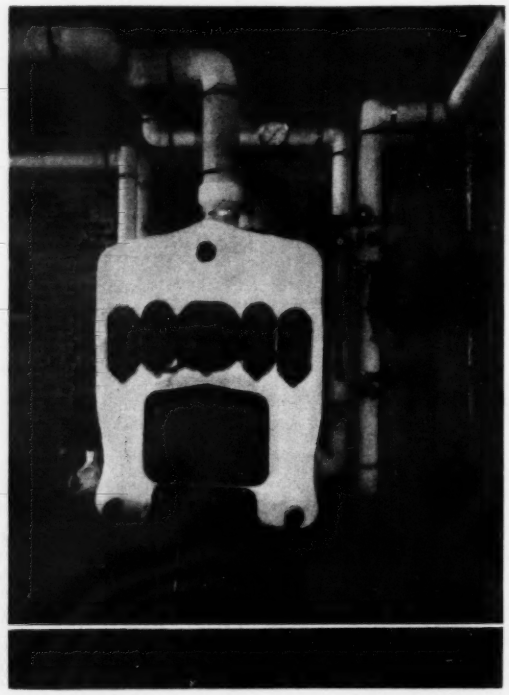
This contractor does not wait for business. He keeps himself busy

Making Better Sales Opportunities

IN THE development of business from two special angles, Daniel O'Brien, a veteran plumbing and heating contractor of St. Stephen, N. B., has achieved success in spite of obstacles. Mr. O'Brien is located in a town of about 6,000, located on the east bank of the St. Croix River. For over 60 miles, this river serves as the international boundary between the United States and Canada. Directly opposite St. Stephen and connected by an international bridge, is the little city of Calais, population about 8,000. Calais is in the state of Maine. Also on the St. Croix River, on the Maine side, are Milltown, Eastport, Robbinston, Red Beach, Woodland, Princeton. On the New Brunswick shore are Milltown (opposite Milltown, Me.), St. Andrews, Oak Bay. St. Stephen is the largest community in Charlotte County, the chief industries of which are farming, lumbering, including logging, and fishing—fish packing.

He Studied His Community

It was a study of the importance of Charlotte County, as an agricultural section that gave birth in Mr. O'Brien, a plan to produce more business for himself. He was already fully familiar with the importance of the fish industry in the county which borders the Atlantic Ocean as repre-



This is an installation that came as a result of advice offered

sented by the Bay of Fundy and St. Croix River mouth.

After a survey of the farming and fishing in the county, Mr. O'Brien found that not more than 1 per cent of the homes of the farmers and fishermen were equipped with private water and sewerage systems, insofar as Charlotte County was concerned.

He decided the time was opportune to launch a campaign in behalf of the private water and sewerage units for the properties of the farmers and fishermen, all these being outside the scope of the civic systems, located at St. Stephen, Milltown, St. Andrews and St. George. The latter town is about 18 miles east of St. Andrews.

A project was introduced whereby electric current for light and power would be transmitted from the St. Stephen power plant, along the shore of the St. Croix, on the Canadian side, to St. Andrews, twenty miles away. St. Andrews, a summer resort as well as a farming and fishing community, lacks sufficient power, the existing station there being inadequate to really supply the local need in both light and power, particularly during the summer and fall.

Simultaneously, with the introduction of the plan to build the transmission line from St. Stephen to St. Andrews, Mr. O'Brien went on a motor tour of the affected territory. He called on each of the property owners located between the two centers, and to whom the light and power would be available with the construction of the new transmission line. He outlined the benefits of the private water and sewerage systems, stressing health and sanitation, and property value increase. "It is time for a change," was the O'Brien battle cry. In calling on the farmers and fishermen he was assisted by his son, George O'Brien, who is associated with his father in the plumbing and heating business.

Approximately 40 per cent of the property owners over the twenty miles of territory were willing to buy the water and sewerage plants and have them installed. However, all insisted on the operation of the systems by the electricity that was to come to them.

The promoters of the electric transmission line encountered a snag, in the opposition of several of the property owners, who owned considerable land along the route of the proposed line. The negotiations between the promoters and the land owners fell through, the chief bone of contention being the sum to be paid the land owners for the privilege of placing poles on their properties.

In disgust, the electric company decided to build their line to St. Andrews, on the U. S. side of the St. Croix, using poles from the power plant to the riverbank, then submarine cable to Calais, poles thence down the river as far as opposite St. Andrews, when a longer cable would be sunk across the river, to St. Andrews. This route would eliminate electric current from any of the properties between St. Stephen and St. Andrews. There is considerable opposition from realty owners of Calais to the poles, but little between Calais and opposite St. Andrews.

Selling in Spite of Conditions

By the antagonism and haggling over the poles fee, Mr. O'Brien lost some promising business. Resulting from his campaign have been three installations of the private water and sewerage systems. One of these was at Black's Harbor, N. B., a fishing village of about 1,000, located about 6 miles from St. George. There, Mr. O'Brien prevailed on Connors Bros., a fish packing firm which operates the only industry there, to install a water and sewerage system for the village, which is composed chiefly of employes of the company, and most of the houses are vested in the company. This was, of course, a bigger contract than several dozen small systems would involve.

So that the O'Brien campaign could hardly be classed as a failure although, numerically, it fell far short of what had been, virtually, assured.

The companion angle to that of the private water and sewerage systems used in the O'Brien business building drive, has been the use of window cards and newspaper advertising to call public attention to the experience and ability of Daniel O'Brien to solve the most complicated of plumbing and heating problems. He has invited property owners of the county to send into his store a statement of what puzzles them, and he would use the telephone and mails to supply his advice. With no obligation on the

part of the recipient of the advice to contract with him for any work.

He has been communicating with the owners of buildings within a radius of about 35 miles, inviting them to tell him their plumbing troubles. He has used the mails, telephone and personal contacts, to get in touch with the property owners. For his advertising, he has utilized as media, newspapers printed in St. Stephen and Calais, and also signcards in his store window.

Having invited the building owners and agents to bring their plumbing problems to him, Mr. O'Brien proceeds to give answers to the questions. There is nothing of a public nature about the replies. In the store window, a signcard bears the question and also the answer but the only name mentioned is that of the plumbing contractor. There is no indication where the property, involved in the query, is located.

The answers are given verbally, at the O'Brien store, or by mail or telephone, as desired by the individual property holder. In most instances, Mr. O'Brien has found the property holder comes to the store for the answer, as he wants to hear it completely and clearly. This gives the contractor a fine opportunity to display and demonstrate just what he means, and he takes full advantage of the chance. He has sample piping for water, sewerage, baths, bowls, tubs, showers, urinals, toilets, and everything in the plumbing category, available for the display and demonstration. He also shows and demonstrates individual farm water and sewerage systems, suitable for the farmers within the radius, this being one of the leading agricultural sections of the northeast.

Solving Problems for Prospects

For instance, the pastor of a local church had been satisfied with a warm air furnace for over forty years. The pastor, in charge of the church for more than two score of years, had been responsible for the installation of the furnace. However, this year, Mr. O'Brien made a personal call on the clergyman, explained the advantages of steam over the warm air, and particularly over such an old plant.

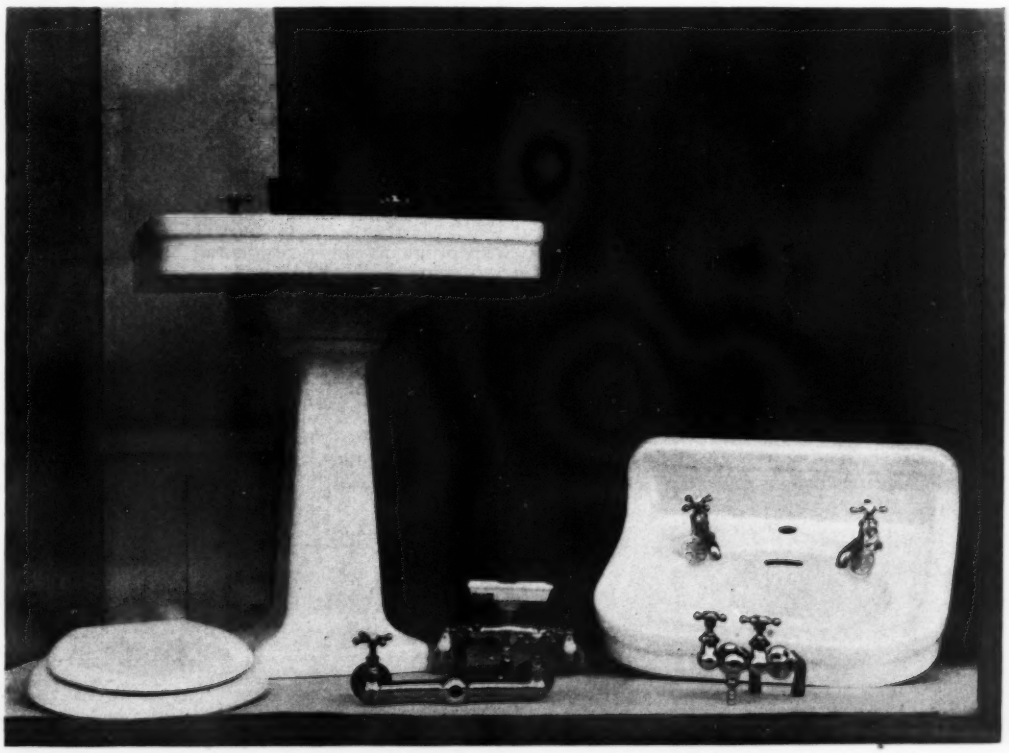
The pastor was eager to hear of the improved methods of heating, and the promise of Mr. O'Brien that the operating cost of the steam would be less than that of the warm air furnace, which, being so old, was described as a fuel eater, giving a minimum in results.

Mr. O'Brien made his explanation in untechnical terms, and the elderly clergyman understood clearly, after Mr. O'Brien had answered some of his questions, just what the contractor was aiming at. Outside St. Stephen and Milltown, Mr. O'Brien uses the telephone and mails to give advice, but in the twin communities on the river, he makes personal calls on the prospective customers, using a motor car as transportation.

Before making the call on the venerable pastor, Mr. O'Brien had been running a series of advertising "talks" on the advantage of having heating work done during the summer and early fall, and having everything in readiness for the first chilly snap. Special aim was made at increasing business in the replacement of warm air furnaces with steam and hot water systems.

Offer of Advice Wins Contract

About 18 months ago, several business blocks in St. Stephen were destroyed by fire, and the rebuilding has



This window, besides merchandise, carried answers to problems submitted

been spasmodic. This summer the reconstruction of one of the burned structures has been started, and the promoter of the company, a local merchant, was somewhat perturbed on the heating question for the new block, to consist of six stores. He took advantage of the O'Brien offer of advice on all plumbing and heating problems, and, after a conference gave Mr. O'Brien the contract for installing both the plumbing and heating systems. What had puzzled him was if all the stores could be adequately heated by the single plant. His doubt was dissipated by the contractor.

In all the contacts with potential customers, it has been impressed on the latter that all work is inspected and guaranteed by Mr. O'Brien, and that his experience of over forty years is available, and behind everything. Moreover, that no contract is finished until the work and fixtures have been demonstrated to the satisfaction of the customer, and approved by him. It makes for permanent customer friendship.

BRING ALONG

Your Plumbing Problems

— to —

DANIEL O'BRIEN

Plumber — Water Street — St. Stephen

Above: The ad offering to solve plumbing problems. Below: Six stores—a job the offer of advice secured

In conjunction with problems submitted to Mr. O'Brien he has given, from time to time, the names of his customers. He has consulted these men and women before placing their names in print. The local newspaper, a weekly, is the only publication used by this contractor in the course of his advertising, which is not regular. He concentrates on drives toward specified objectives.

Being located in close proximity to the local railway station proved an asset to Mr. O'Brien in securing the contract for the installation of a new station building. His window cards were seen by the head of the Canadian Pacific Railway for the district, and also by the general contractor, and they were drawn by the statements of his long and varied experience in both plumbing and heating.

During the past two years, Mr. O'Brien has installed plumbing and heating systems in filling stations, garages, railway stations, mercantile buildings, overnight camps, wayside hotels, fish plants, in addition to residential properties and several churches. His inspection of all contracts continues for several months following the completion of the installation work, his ambition being to thoroughly satisfy all customers on the theory they are the best of advertising. Publishing the names of the "satisfied customers" has been a marked asset, and the customers have recommended him to their friends.

Editorials

Are They Merchandising?

ONE of the easiest things in the world —and frequently one of the most erroneous—is to make a sweeping general statement about one group of people. The unfortunate part of it is that we accept those sweeping statements and it takes a long time to show them in error. In that class of statements is the old bromide: "The plumber is no merchandiser."

This editorial is written because of a letter recently received, in which this statement was made baldly, with no qualification. But it is dangerous to make a statement like that. Usually it is based on the fact that the man making it has contacted a number of plumbing and heating men, in the interests of a particular product. Somehow, he hasn't found them ready to throw everything else out of the window and commence, then and there, to push that product every minute of the day. It might, in fairness, be pointed out that, if the man in question had a product that would pay for that kind of attention, it is his sales presentation that is at fault, since he has not made these plumbing and heating men see it his way.

As a matter of fact, the contractor may have other products of the same nature in stock—on which he listened to similar enthusiastic sales stories. Or he may be developing his business along lines that do not require the product in question.

Now, add to a number of turn-downs of this kind the number of actual cases in which the salesman will be met with an utter lack of capacity on the part of another set of contractors to absorb his merchandising story and you have the basis for the salesman's feeling that "Plumbers just don't merchandise."

In the case of the first type of turn-down, either the sales representative doesn't get his story over, or the contractor knows his own business a little bit better than the man to whom he is talking. In the second case, if the sales representative were selling groceries to grocers, radios to electrical dealers, or any product you care to mention, he would discover the same number of men in those other lines who showed a complete lack of interest in modern merchandising.

When we survey the type of advertisement now being run in this publication; when we seek to select the best merchandising stories from among all those which crowd in to us; when we talk with plumbing and heating men in field contacts; when we notice the strong merchandising flavor that is given to every meeting of these contractors; when we go over the many letters received asking for advice and assistance along merchandising lines; when we see the response to such special offers of merchandising material as our recent remodeling campaign—when we take all these things into consideration, we feel that it is time to forget that statement: "The plumber doesn't merchandise," and for every man in the industry to get the facts.

The facts, briefly stated, amount to this: As compared with other retailers, the plumbing and heating man is doing just about the same merchandising job as the others. Our field investigations, checked against figures issued by the government, show so close an agreement on such vital factors as the amount of business done by various groups, that they serve as a mutual check.

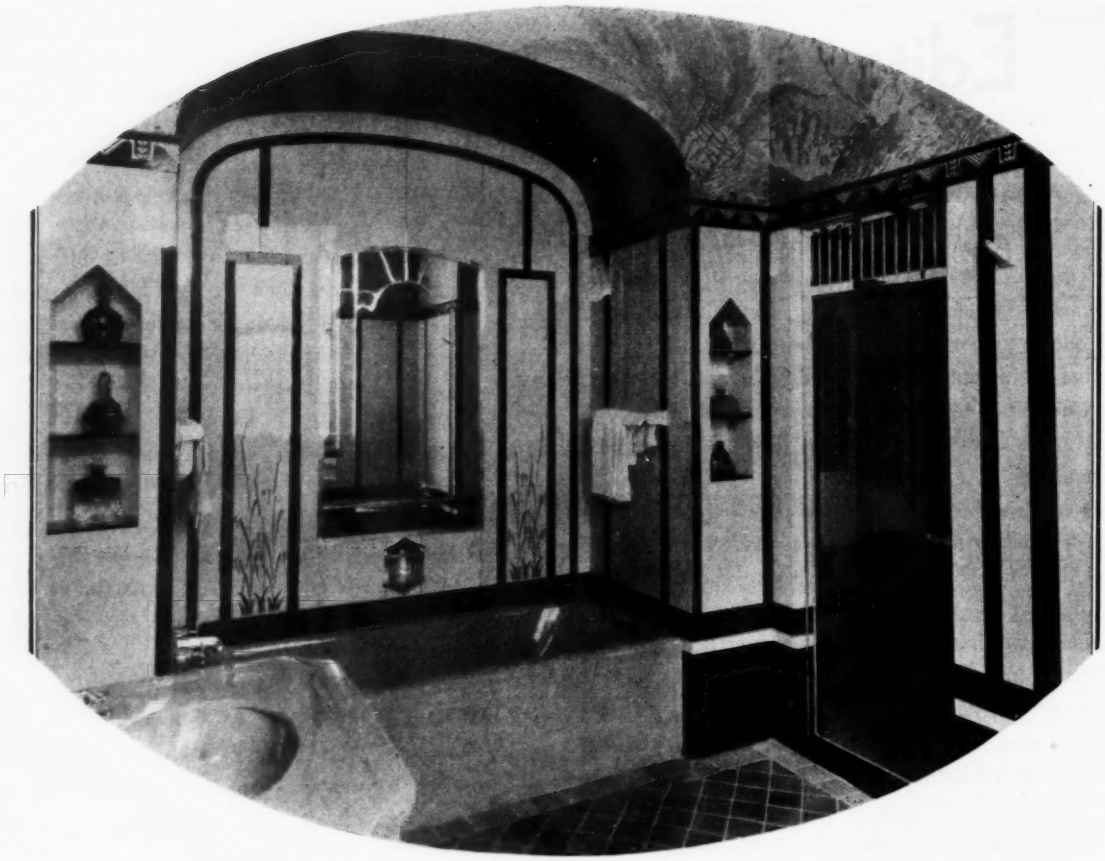
What is needed is selective selling—as well as a more careful selection of phrasing in speaking of an industry as broad in its scope, and made up of as many varying types of men and firms, as is the plumbing and heating industry.

Holiday Good Wishes

BECAUSE our next issue will be dated the day after Christmas—and because we don't want to be late with our good wishes for the season—we take this opportunity to reiterate the message that is on our front cover: "To Every Reader—A Merry Christmas."

There is a strong and noble example in that noblest of all Christmas stories which Charles Dickens wrote, to show us that adversity and troublous times need not disturb too deeply the serenity of our lives. Even the head of the family, however grudgingly at the first he might have done it, acknowledged benefits received at the hands of old Scrooge, who was himself undergoing a painful lesson.

Our deepest wish for our readers is that the good will and tranquility of the season will take possession of them, calm the ruffled waters for them, and so bring them to the realization that it is not, perhaps, in the possession of many things that true merriness consists, but rather in the striving after them. And, strangely enough, it is that realization which, better than anything else in the world, prepares the way for success.



A beautiful bathroom, done in a tile that is glass-like

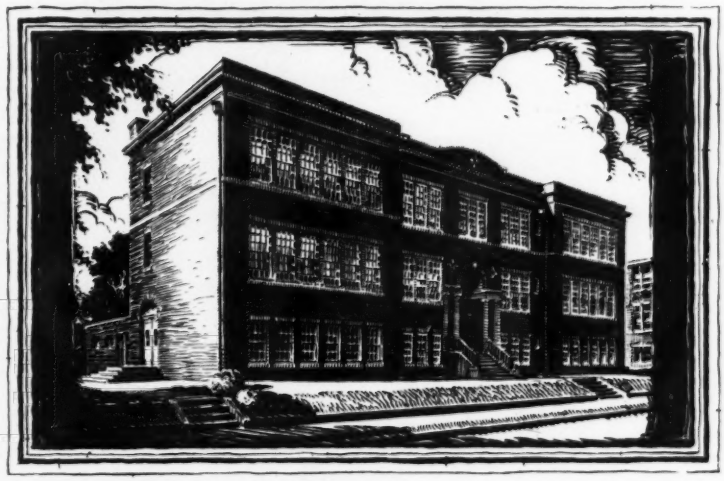
The majority of plumbing contractors interested in remodeling prefer to handle the entire job. This article, the first of two, gives the master plumber information concerning the various types of tile available

Wall Coverings *for* Plumbing Jobs

MANY plumbing contractors have found that the interest in home remodeling has made it advisable for them to act for their customers in handling the complete job, including the decorations to be furnished after the new fixtures were set. This has, of course, called for a knowledge of the possible wall finishes for bathrooms and kitchens, and has made it possible for the contractor to figure on this phase of the work to his profit.

In addition to this, contractors have found that customers are better satisfied where the job can be handled as a unit and where the customer is not under the necessity of talking to three or four building material men or workers.

It has also proven of an advantage with a number of alert contractors who have posted themselves on the subject of wall finishes so that when called in to figure a plumbing remodeling job, it has been possible for them to put in a complete figure for the job. Often it has meant an easier sale or perhaps a sale where the presen-



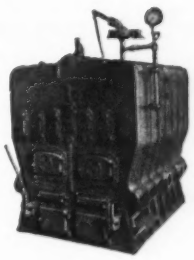
Point Pleasant High School Building, Point Pleasant, New Jersey. Using two efficient Burnham Big Twin Cast Iron Boilers as heating units. J. Nobel Pierson, Architect. Harry Knecht Co., Heating Contractors.

They Play Up to Your Rigid Requirements for School Heating

1—You ask for boilers that will stand up under all firing conditions. That won't give out and require repairs after a few years of use.

2—You expect the utmost in fuel economy, whether coal or oil is burned.

3—You must have boilers that will pick up quickly, owing to the many extra-scholastic uses to which modern school buildings are put.



To satisfy these conditions, our first choice is the *Burnham Cast Iron type, installed in so many of the new district schools in South Jersey.

Their substantial cast iron sections withstand many years of exacting use. Many installed twenty years ago are still in use.

Extra long fire travel gives them the needed pick up. It also results in extraordinary fuel thriftiness with coal or oil.

With oil this same long fire travel muffles down possible sounds of combustion.

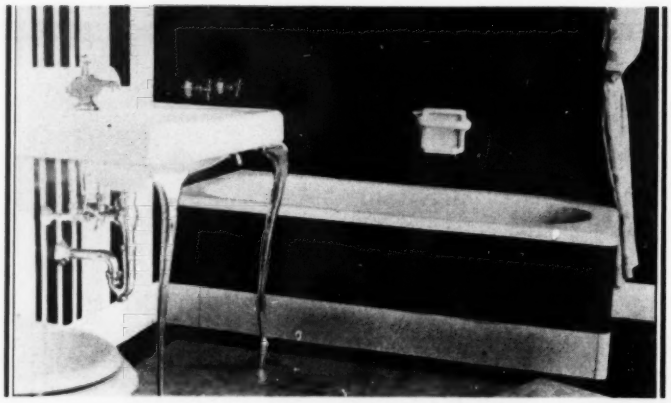
Glad to send you all particulars.

***We make both cast iron and steel boilers, and would be the first to advise Welded Steel Boilers where conditions designate them to be best.**

Burnham Boiler Corporation

IRVINGTON NEW YORK

Representatives in all principal cities of the United States and Canada



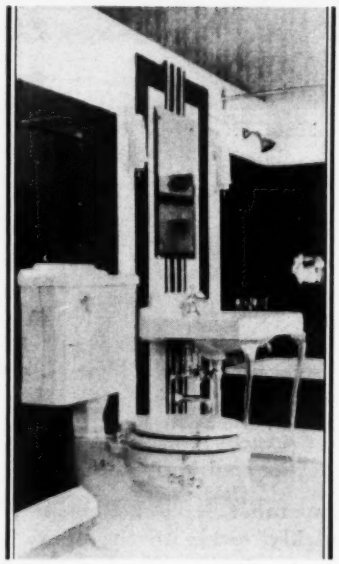
tation of the plumbing fixtures alone would not have been sufficient to close the deal.

Tile as a Sales Help

As one successful Chicago contractor, who has built a large volume of remodeling work in the last three or four years, says, "Often, when it has not been possible to secure consent of a customer to go ahead with the remodeling job when we have been talking plumbing fixtures, I was able to keep the sales conversation going by bringing in the subject of the completed room, describing the possible wall finishes, and launching upon an enthusiastic description of the entire room as it would appear when finished."

It is this contractor's firm conviction that the master plumber will be in a more advantageous position if, in accepting a bathroom or kitchen remodeling job, he can handle the entire project, including the decorations.

Tile for use in bathroom and kitchen has become the rule in a modern building, and remodeling jobs have to a large extent called for the use of tile as finishes. Contractors have been familiar for years, of course, with the ceramic tile and where this kind of tiling has been used, the alert contractor has usually formed contact with a tile man and worked with him in figuring jobs.



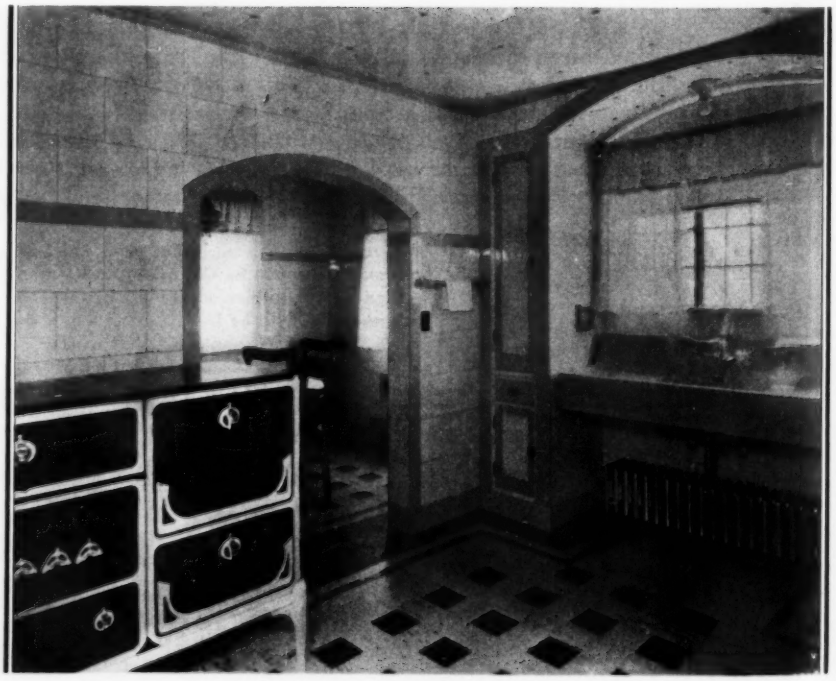
Two views of a plumbing showroom with glass-like tile backgrounds

A kitchen done in the tile that gives a glass-like surface

But in addition to the ceramic tile, there have been developed a number of composition tiles, using various materials. This has made possible a greater selection for the customer and, in the case of the plumbing contractor who has familiarized himself with one or more of these composition tiles, has been able to take on the finished job.

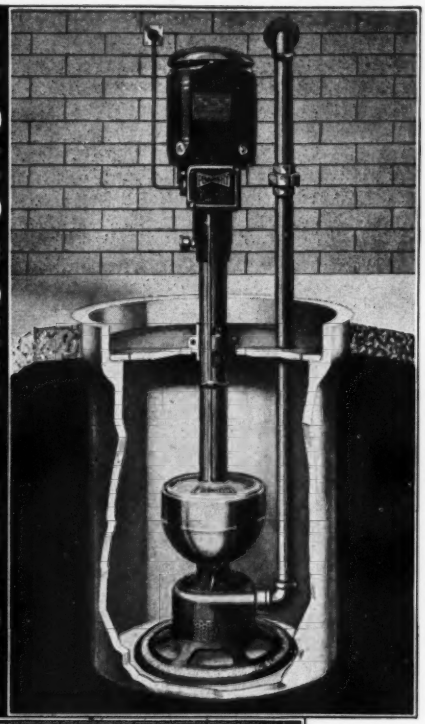
A Tile-Like Glass

Perhaps, in discussing the various types of wall covering now available, following the reference above to the regular ceramic tiles, it would be well to take up first a type of tiling which is made of fused rock-slab materials. This particular type of tile has a high glossy finish, and almost the reflective characteristics of glass. It is officially described as "an opaque and impervious oil polished, vitreous slab material." About sixteen minerals are fused under tremendous heat, rolled into slabs of various thickness and then tempered.



A few reasons why— Plumbing Contractors install..

BRONZE THROUGHOUT



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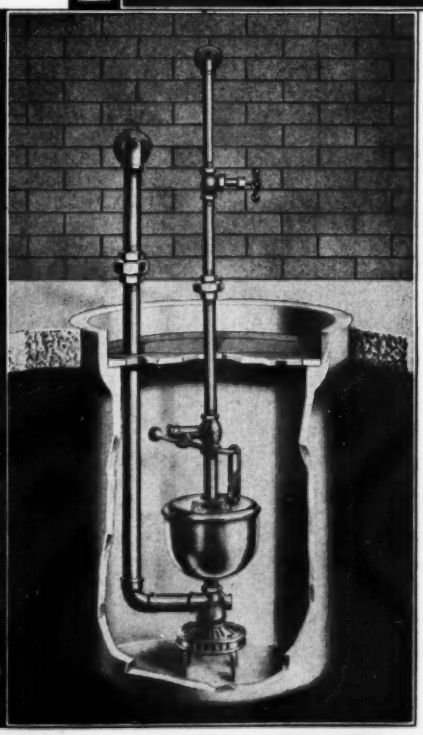


TRADE PENBERTHY PRODUCTS MARK

TO dispose of seepage below sewer level—or where sewerage facilities are not available—many plumbing contractors prefer one of the units illustrated here. Local conditions determine whether the electric or hydraulic unit will be most economical—but both pumps have many characteristics that appeal to the plumbing contractor.

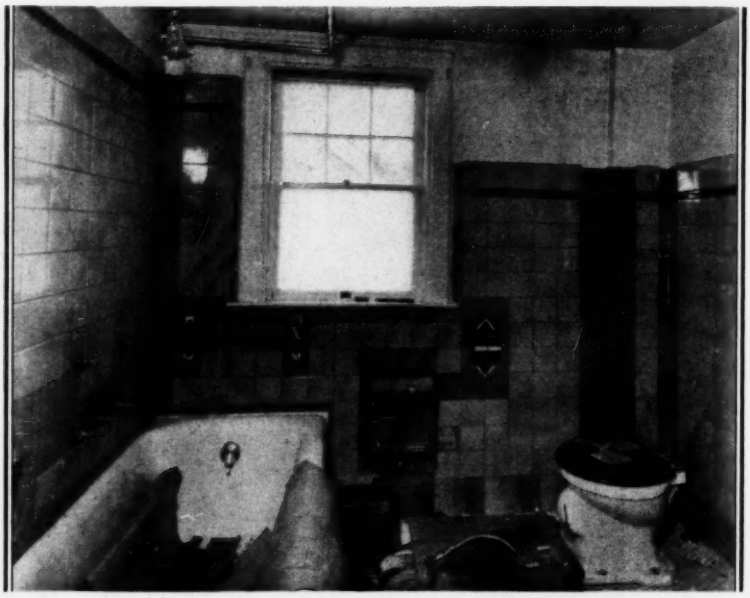
Both the Penberthy Automatic Electric Sump Pump and the Penberthy Automatic Hydraulic Cellar Drainer are immune to corrosion—they are copper and bronze throughout. Both are thoroughly dependable under the most severe operating conditions, and are economical of electricity and water power. They are fool-proof, require no kid-glove handling, and are easy to install—when properly installed there is no servicing to consume time and reduce profits.

Manufacturing a complete line of both electric and hydraulic units in a full range of types and sizes, the Penberthy organization is especially well qualified to recommend the correct equipment for any specific case. Leading jobbers throughout the country stock both electric and hydraulic units.

PENBERTHY INJECTOR COMPANY

Established in 1886 — DETROIT — Canadian Plant Windsor, Ont.

PENBERTHY PUMPS REMOVE SEEPAGE WATER



Showing a job in progress. The tile is a vitreous surface on a metal base. Note grooved undersurface

It is, of course, a non-porous and non-absorbent material, and so is impervious to moisture, grease or acid—except that which is used to etch glass. This type of tiling comes, of course, in a number of the colors which have become popular in sanitary ware, and in matching or contrasting colors. It comes in thicknesses of 11/32″, 7/16″, ¾″, 1″ and 1¼″. The thickness used depends upon the location.

It may be applied to any hard, dry, rigid wall surface. The wall is first painted with water-proof sizing compound, and the tile is then applied with a special plastic cement. All joints are pointed and sealed with a cement compound in colors to match, or, if desired, in contrasting colors.

This type of tile offers the contractor a variety of decorative finishes. Some of the tile may be had in prepared designs where solid color is not wanted. We show with this article two photographs taken in the display of an Illinois plumbing contractor showing this type of tiling used to enclose the tub and also used as background for the tub and lavatory.

We also show a kitchen and a bathroom finished with this material.

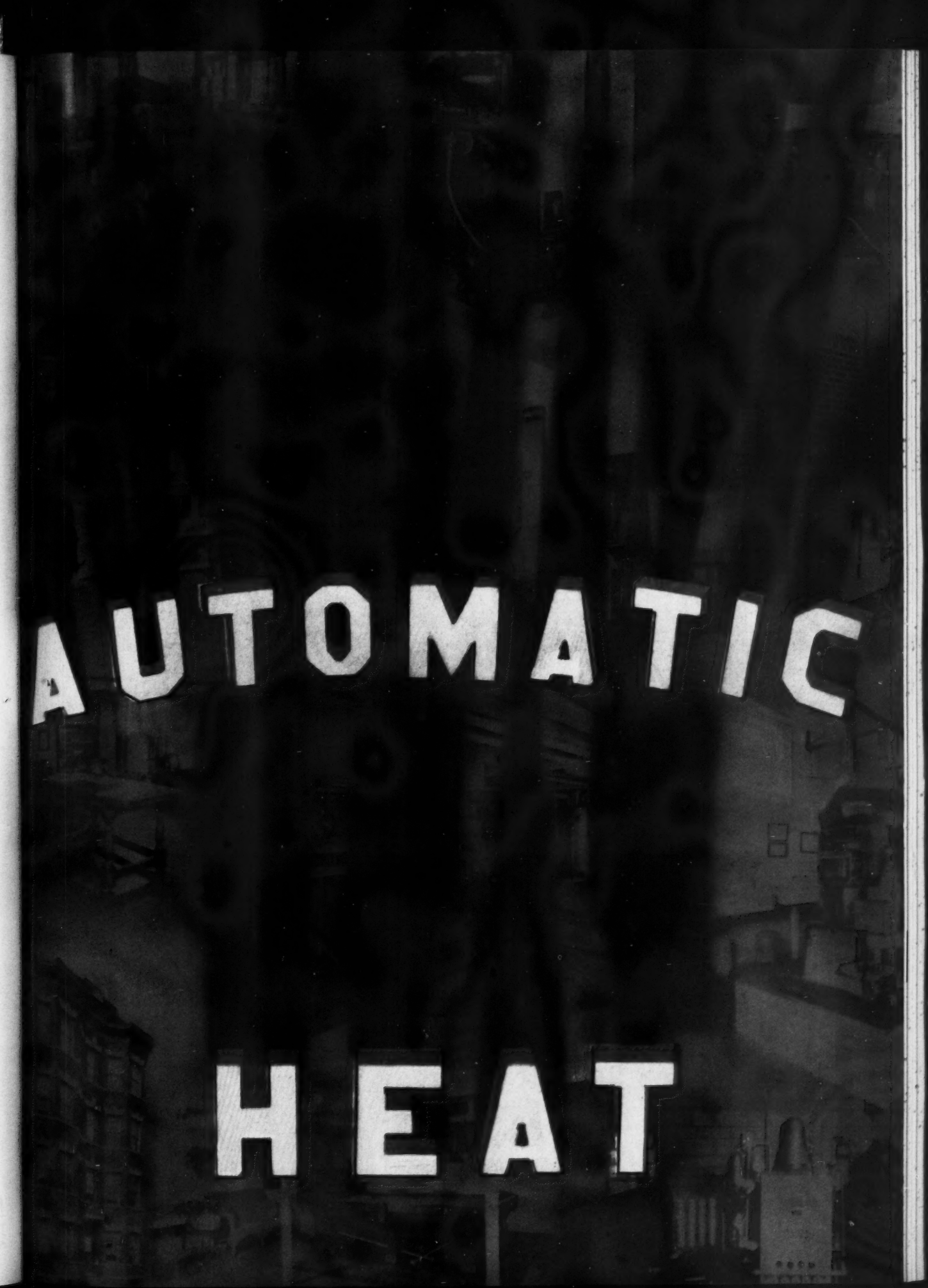
The bathroom shown above, as it was finished with the metal-base tile

Metal Tile

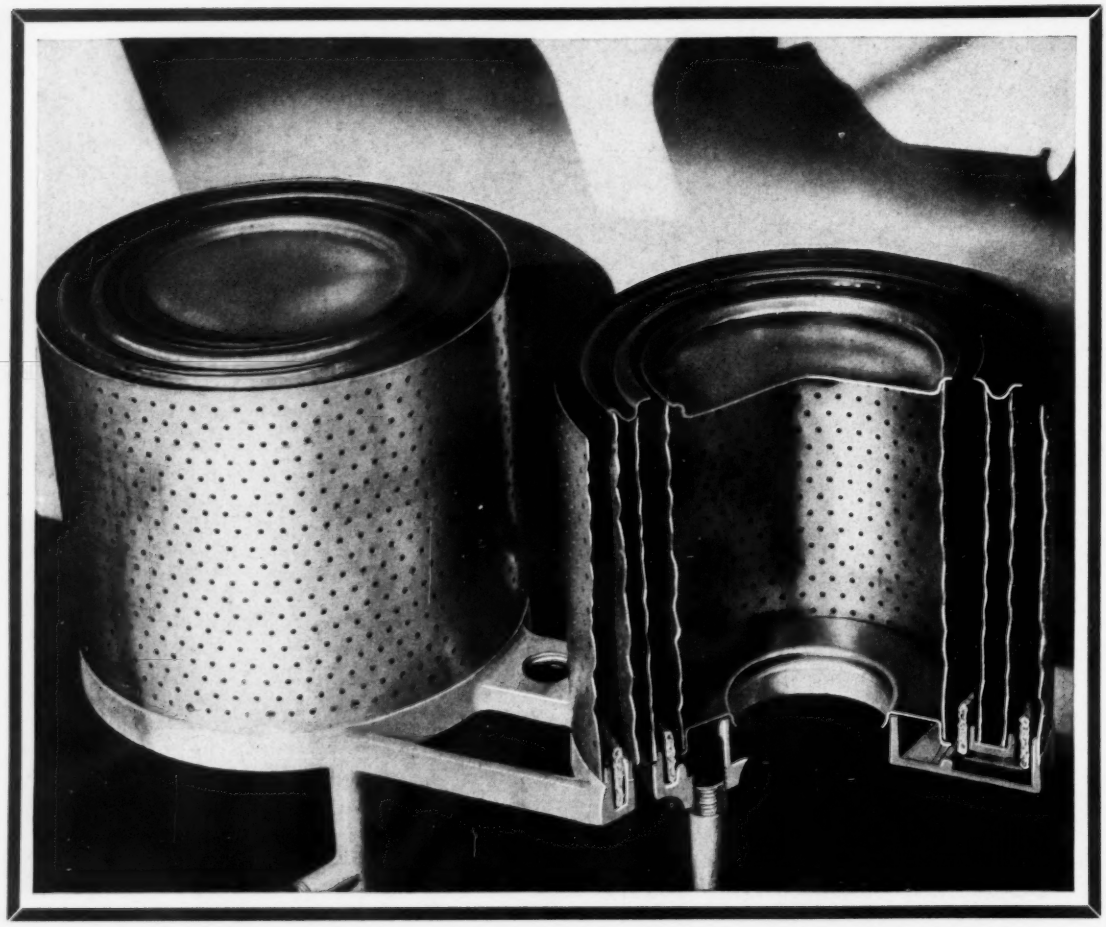
There has been an unquestionable amount of interest shown by plumbing contractors in the metal tiles which have been presented for their consideration. Some of those plumbing contractors who have been interviewed by DOMESTIC ENGINEERING in connection with their activities on remodeling jobs have shown a keen appreciation of the factor which their handling of the tiling of the finished job could be in closing sales in the older homes in the community. This metal tile is light in weight and presents no difficulty in application which the plumbing contractor should not be able to master. Metal tile is, of course, a more or less outgrowth of the discovery that a vitreous surface could be placed on a metal base.

One type of metal tiling was described as "a vitreous enameled steel bodied tile." No expert tile setter is needed to install this type of material, which is laid by the use of a grooved arrangement on which the individual tile is placed. This foundation is a grooved sheet of specially prepared wood which, it is said, acts also as insulation. This foundation sheet is applied to the wall structure and the tiles are then attached to it with a special water-proof cement. The flanges of each tile are pressed into the groove.

(Continued on Page 130)


AUTOMATIC
HEAT

AUTOMATIC HEAT



SILENT GLOW SUPERIORITIES
• 3 • The Burner Unit

The Silent Glow Range Burner has many marked superiorities. You've read about Microfeed Valves** and the Reversflo Filter**. Here are several more.

At the top of the cut-out illustration, you will see Silent Glow's exclusive patented Deflector Rings*, which insure an even flame and, therefore, even heat at all times. Near the bottom, in the center of the burner, is the Super-heater**, which makes Silent Glow the fastest starting of all range burners.

The Cadmium Plated Base prevents carbon deposits and also helps to maintain an even flame. Now look carefully between the first and second shells; you will see the Kleendam, a ridge which prevents oil from spreading, so that it vaporizes evenly and thus reduces carbon to a minimum, increasing burner efficiency.

There are other features shown in this illustration which we shall emphasize in another advertisement. They, like those we have mentioned, are all exclusive with Silent Glow. Taken together, these features, Microfeed Valves**, Reversflo Filter**, Reddylite** and Self-cleaning Oil Feed*, make Silent Glow the greatest value in range burners on the market today.

Because of the value it offers to housewives in giving them modern, efficient, economical cooking service, Silent Glow is completing the biggest year in its history. Well over 100,000 housewives endorse this famous range burner. So, if you want to sell an article of known merit, made by the strongest company of its kind in the world, accepted by consumers, backed by consistent advertising, better write or wire us at once.

THE SILENT GLOW OIL BURNER CORPORATION

Chicago HARTFORD, CONN. St. Paul

IN CANADA: SILENT GLOW OIL BURNER CORP., LTD.
6320 St. Hubert Street, Montreal, P. Q.

Member American Oil Burner Assn.
Member Oil Heating Institute
Member National Electric Light Assn.
Member Distillate Burner Mfrs. Assn.

*Patented
**Patent applied for

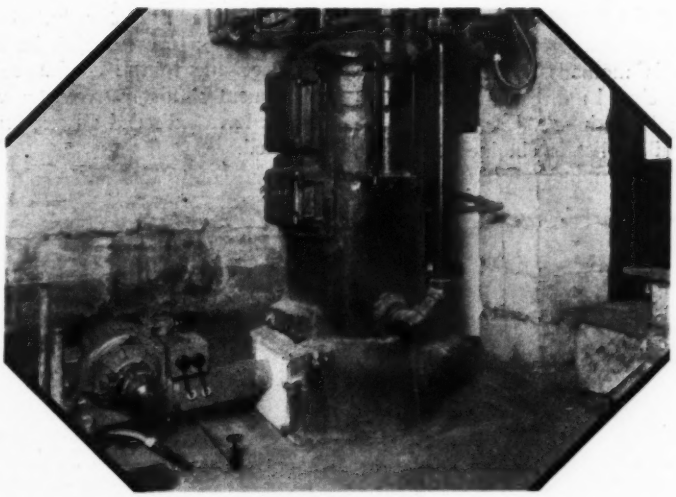
In this
AUTOMATIC HEAT
Section will be found:

Capitalizing Customers for Oil Burner Sales

Automatic Heating Prospects

The Importance of Good Engineering in Stoker Installations

Heat Balance in Oil Burner Installations



A difficult installation in a small boiler

Capitalizing Customers *for* Oil Burner Sales

DAVIS & BOUBLITZ of Baltimore, who have been in the plumbing and heating business for twenty years, decided in 1929 to handle an oil burner. They selected a well-known make, but did not give either the necessary time or concentration to make a success of selling it at the outset. However, they did observe there was undoubtedly a field for oil burners and the proper parties to handle them would be experienced heating men.

Acting upon this belief they opened an up-to-date store in the business section, and employed an experienced oil burner man to take charge under their supervision. The first year this firm sold one hundred and fifty-six oil burners, and would have sold many more but their particular burner was not made in a small size until very recently.

AUTOMATIC HEAT

DAVIS & BOUBLITZ

MODERN—SANITARY PLUMBING

SUBURBAN AND COUNTRY WORK

902 W. 36TH STREET BALTIMORE, MD.

September 22nd, 1930.

Dr. R. E. Fricke,
1418 Eutaw Pl.,
Baltimore, Md.

Dy dear Dr. Fricke:-

A colleague of yours suggested this letter.

Quite a number other prominent Physicians and Surgeons are among the several hundred Baltimoreans, that for many years have been enjoying care-free-Automatic heat. It does seem as if -- men of your profession, above all others, realize the importance -- in the home - of Automatically controlled, uniform termperature.

Fuel oil replaces dirty coal and ashes. You will be surprised at the low cost of enjoying care-free Automatic heat. There is a size for your home or office. Act now.

Very truly yours,

Davis & Boublitz.

By Geo. Stevens

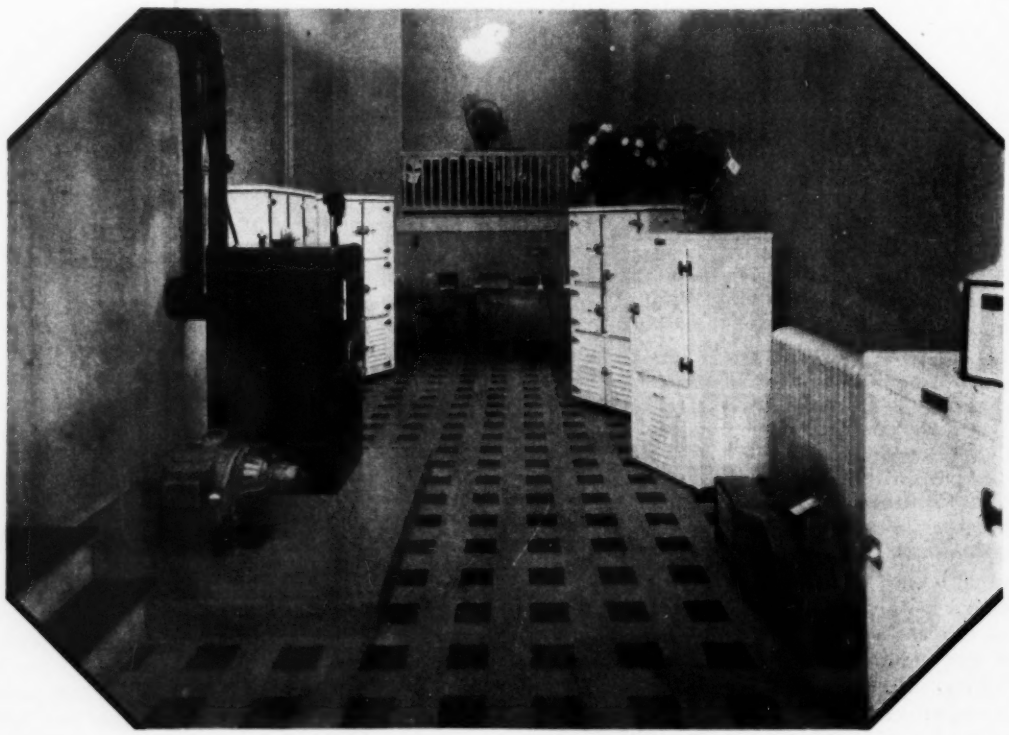
This letter, especially directed to physicians, proved that definite sales efforts paid big dividends

Reaching the Prospect

Mr. Daniel Kelly, the salesmanager, tells of his experiences and outlines his methods. Three types of advertising are used, namely (1) direct mail, (2) canvassers, (3) newspaper advertising.

For direct mail the mailing list is obtained from the list of old customers of the plumbing and heating branch of the business. Naturally, where a customer has been satisfied by a previous job he lends himself as a good prospect due to the confidence developed before, and consequently this source is a very fruitful one. The results have exceeded all expectations and leads in sales obtained.

Some months ago a direct mail was sent to a list of



The oil burner display in the Davis & Boublitz store

WE HAVE had the pleasure of telling the general merchandising story about this firm and are now glad to show how the same principles have been successfully applied to oil burner sales

fifteen hundred physicians and the inquiries were so numerous that they all could not be taken care of properly. The response was tremendous, with encouraging results.

Mr. Kelly has worked out a system of his own in reference to soliciting by canvassers. In the first place only inexperienced men are employed as canvassers, and they are given one week's schooling before they are sent out on the street. These men are only to look for prospects in particular districts where they are assigned and it is not their duty to close a sale. After these canvassers have noted in their note books the names, addresses and other remarks concerning a prospect, a list is turned in to the office every evening, and the following morning a salesman, of which there are now three, is sent to close the deals.

Following the Leads

These are distinguished from the canvassers by a more thorough technical knowledge of the oil burner and heating in general. By this method Mr. Kelly believes he receives a "sifted" list of prospects and can send experts who are equipped by their knowledge to put the sale across in the least possible time without the necessity of these trained men going from house to house. The canvassers are paid $15 per week, and 5 per cent on sales made from their prospect lists. The first week out canvassers turned in sixty names and five were sold.

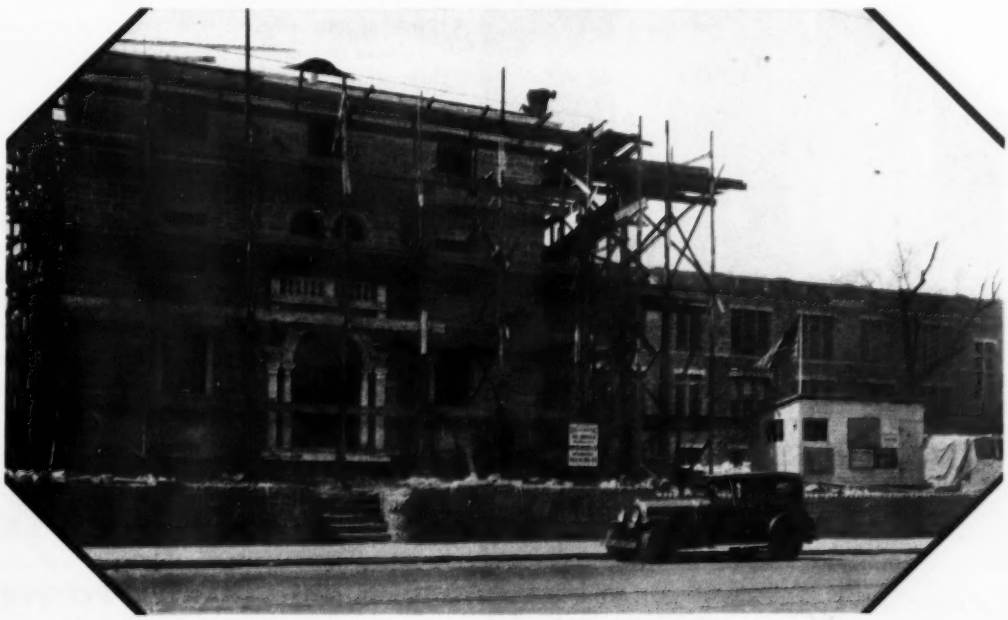
Newspaper advertising must be carried on to tie in with the manufacturers advertising in magazines, street cars, etc., and this firm is running a one-third page newspaper advertisement six times in ten day intervals. Of course it is quite difficult to place a finger exactly on how inquirers have seen or heard of the concern through these advertisements, but the sales manager believes that some good must be derived from keeping the company and its product continually before the public.

Suburban Homes Best Prospects

The greatest source of the oil burner business, Mr. Davis believes, is the suburban homes, and this firm who had developed a plumbing and heating trade in the outlying sections is now going back to their customers, and are selling them oil burners.

In the first place these people can afford it, and secondly, exposed houses are continually being fired in winter to keep them comfortable, which makes the installation of an oil burner a great trouble saver and a necessity. In fact he states that the farther out you go the greater the chance of selling the oil burner, and consequently concentrates on suburban prospects whenever possible.

Since the reputation of an oil burner depends greatly upon service rendered in connection therewith, this firm is always prompt in answering all calls twenty-four hours a day, and the names of the officials are listed in the telephone book for night calls. They in turn get in touch with the mechanics who are prepared for such requests. (Continued on Page 73)



One type of job secured by good merchandising

AUTOMATIC HEAT

AUTOMATIC HEAT

To sell more oil burners

You need a complete line *but* all under one brand, one policy... Here's why.

The Metropolitan Tower, Riverside Church, Holland Plaza Building, typical home and oil truck shown here, symbolize Petro-Nokol oil heat being enjoyed by more than 550,000 from coast to coast.

Sell three *different* brands of burners... and you live in a house divided against itself. One says, do this... the other says no! Policies clash. Favor one and displease the other two. What chance of 100% co-operation? How can any one of three manufacturers give you all he has for you... when you are giving him but a fraction of your support?

Yet a complete line of equipment is vital to success. For one-fourth of your market is calling for a rotary. Another sixth can best be served with a heavy fuel oil domestic burner. Fully a third of your business can come from sales of a pressure type with electric ignition and pump. And big jobs represent a very happy one-quarter of your volume.

Petroleum Heat & Power Company is the only manufacturer offering a specific burner for every heating need. Under one brand, one policy, one program. As a nation-wide public service enterprise, we have demonstrated that different types and sizes of heating plants require different types and sizes of burners.

Under this unified leadership, Petro-Nokol dealers have shown a remarkable increase this year over last. Yet their inventory stocks are as small as many dealers selling only one type of burner. Our method of operation solves that problem.

In addition to the only complete line... they have all the price advantages of the $295 Rotary. The priceless sales help and guidance of outstanding merchandisers. The most effective newspaper advertising campaign in the industry. And, the tremendous advantage of representing the oldest and largest oil heating organization in the world.

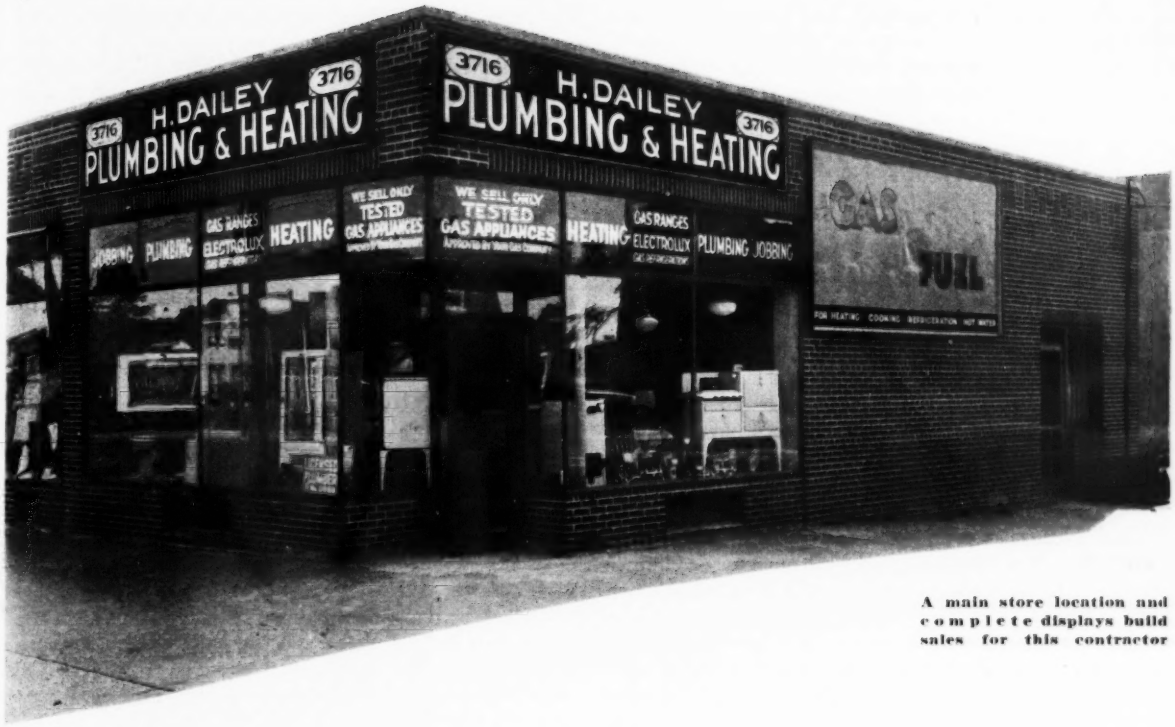
It will pay you to discuss this matter further with one of our representatives, or to write direct to the factory.

PETRO-NOKOL

PETROLEUM HEAT & POWER CO.

World's oldest and largest oil heating organization

Main Offices and Plants: Stamford, Conn.



A main store location and complete displays build sales for this contractor

Automatic Heating Prospects

—a lesson in merchandising to a specific group of people. We publish this story because we believe our readers will be interested in how one heating dealer found opportunity during difficult times

MANY people are sure that present conditions are a body blow to business, but "It's an ill wind that blows no good" and Henry Dailey, plumbing and heating contractor with a showroom on the outskirts of Greater New York, in Throgg's Neck, found that the crash of prices on the stock market in October, 1929, indirectly built up for him an increased output for his wares.

Eleven months ago contractor Dailey opened this showroom, which carries a complete stock of plumbing and heating equipment from gas ranges and gas refrigerators to gas and coal boilers. Prior to this, for five years, he had maintained a smaller showroom elsewhere, which was not so completely stocked as this one, neither was the location as central. This showroom is right on a business corner, and the fact that Mr. Dailey began to branch out when the depression was at its worst shows that his business has been stepping along briskly, while most other business men have been crying "hard times."

Catching an Opportunity

Throgg's Neck is an outlying section of Greater New York. The name suggests the geographical layout. It juts out from the mainland like the neck of a giraffe and is surrounded by East Chester Bay, the East River and Long Island Sound, hence the name Throgg's Neck. Because of its proximity to these waters, this little peninsula is a favorite rendezvous for summer vacationists, most of whom own bungalows there.

The summering visitor to Throgg's Neck is not a millionaire, but like most New Yorkers of means, he dealt

AUTOMATIC HEAT

in stocks and while everything was going up, he was spending accordingly, although he wasn't buying plumbing and heating equipment from contractor Dailey nor any other contractor in that section. The reason was obvious. Summer homes are never heated and people are not so particular about their summer home plumbing.

It is no easy job to sell a summer bungalow a remodeled bathroom or a set of radiator cabinets. Most of the time he or she is at the beach or hanging around somewhere in a bathing suit, and as long as the bungalow is tidy and clean, nobody makes adverse comments. However, most of these people knew and appreciated the value of good plumbing and heating equipment, because their winter homes were adequately fitted up in this regard, from automatic heat to electric dishwasher sinks, but Dailey never had a chance at this business, nor did he ever hope to make many plumbing and heating sales to this source, unless it was an occasional repair job, where a pipe had burst during the winter and required fixing before the vacationist's arrival the next summer.

Then came the break in the stock market. The ill wind that blew Dailey good. Strangely enough, it seemed that the majority of Throgg's Neck vacationists were affected, and they began to turn their summer bungalows into all-year homes. This meant plumbing and heating installations to make them habitable three hundred and sixty-five days in the year. Dailey went after this work before the others sensed what was happening and got the cream of it. He is still turning summer bungalows into all-year-round residences, for people who have been forced to retrench because of financial reverses due to the stock market crash or who have had their incomes greatly curtailed, which necessitated giving up their high-priced homes and apartments in the more populous sections of the metropolis.

Regardless of what directly affected their pocketbooks adversely, Dailey says that behind it all was the stock market crash of 1929, so he insists that he made money in Wall Street even though he never played the market. Only recently one man who had a $75,000 home in New York had to give it up. He still had his summer bungalow at Throgg's Neck, worth $6,000 or $7,000, fully paid for, so he turned it into a year-round homestead.

Making Permanent Homes Livable

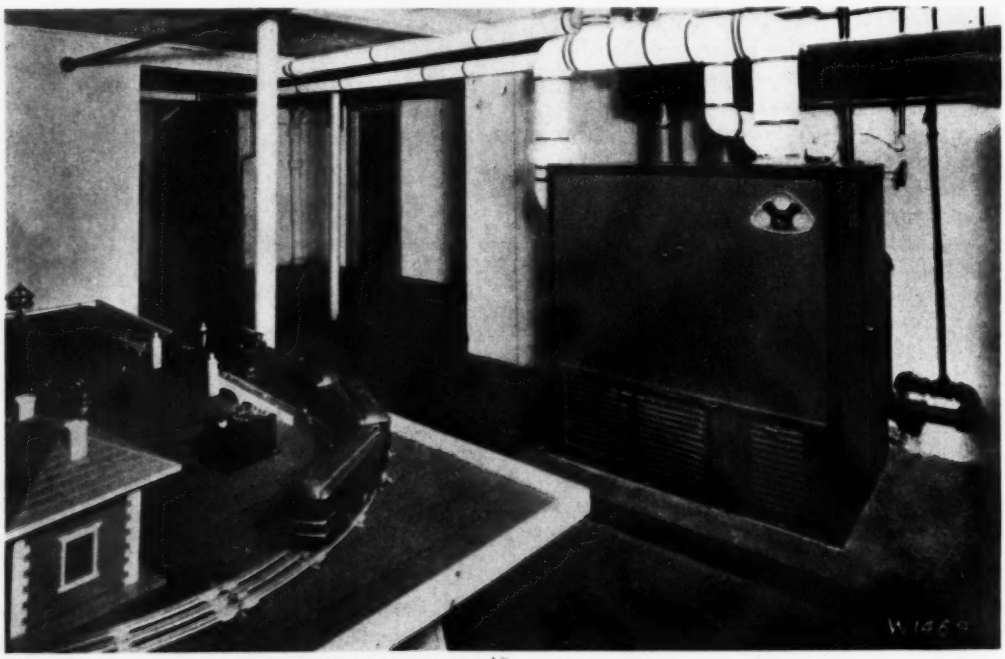
Dailey was called in to install the heating plant and more adequate plumbing. The heating plant alone cost $1,500—a gas-fired boiler with steam radiation. This is a typical example of what has been happening around Throgg's Neck since the stock market crash. It is cheaper to live there than in the city itself, it is more healthy and more neighborly. The fact that many people have already started to live there all year is inducing others to follow whether they lost money or not, whereas, heretofore, had anyone the desire to stay there all winter, that family would have been living in genuine isolation, which is not particularly desirable.

Gas Sales Bulk Large

Dailey is now making plans to open an additional showroom in another section of the city. He says that a showroom in a prominent section pays. Dailey's windows are illuminated until twelve o'clock at night and are shut off automatically with a clock. He sells ten gas ranges monthly to "walk-ins" and five gas refrigerators, other merchandise in proportion. His gas appliances are on consignment from the gas company. On the day we interviewed him, he had just received a check from the gas company for co-operative sales made during the preceding month. "You need sell only three gas ranges a month to pay the rent," explained Mr.

(Continued on Page 74)

This is the type of automatic heating plant that widespread use of gas is making possible



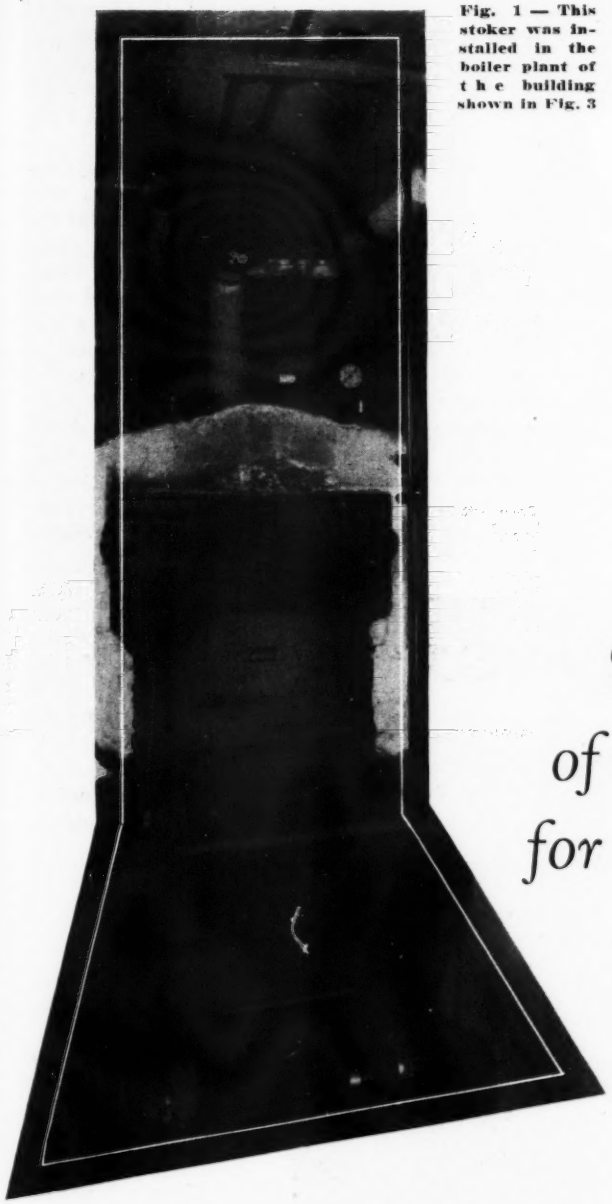


Fig. 1 — This stoker was installed in the boiler plant of the building shown in Fig. 3

Once installed in a boiler, the stoker becomes a part of the heating system. A knowledge of domestic heating plants is indispensable. Obviously the heating contractor is especially fitted to install and handle stokers

The Importance *of* Good Engineering *for* Stoker Installations

By JOHN WILLARD

OUR experience has led us to believe that no dealer can make a success of selling stokers, even, or perhaps especially, domestic stokers, unless he has in his employ or available at all times, at least one man who can correctly diagnose any trouble arising in any part of a customer's heating plant, and apply a successful remedy. Unless he does this, any trouble which appears after the stoker is installed will cause the buyer to order the stoker out.

Here in our city, where every one of our installations is made by thoroughly trained men, we practically never have a take-out. We probably encounter considerably more cases of trouble than are met with by the average dealer because we feel justified in undertaking peculiar and unusual installations. We keep closely in touch with the customer for the first few days after starting up the stoker for him. If he is not getting satisfaction, we can always find out very quickly what is wrong. About nine-tenths of the time he has been trying to use the wrong kind of coal, his furnace is cracked, the chimney is too small or obstructed, there is insufficient radiation in his house, or some part of his heating plant other than the stoker is at fault. As soon as the fault is corrected, the customer becomes a strong booster for us and the stoker we install.

Knowing as we do from first hand experience that it is possible to have almost 100 per cent satisfied customers, it was at first very surprising to us to find that some

dealers have not been able to make some of their stoker installations stay sold. Of course, some few dealers probably have failed to understand very well the stoker itself, but most of them have fallen down on account of insufficient knowledge of combustion and heating plants.

From the manufacturer's standpoint, the larger stokers used for firing the boilers of good sized industrial plants are sold for enough money to justify sending an experienced mechanic considerable distances. A manufacturer specializing in the small domestic stoker is not justified in sending a factory engineer on a trip of a thousand miles or more to show a prospective sub-agent or dealer how to install and operate his first stoker.

The stoker, once installed in front of a boiler becomes a part of a heating system. A thorough knowledge of all sorts of domestic heating plants is indispensable, for the contractor.

As an illustration of what probably all stoker manufacturers are up against, we will cite the following example. Recently agencies were established in two nearby cities of about the same size. It was not practical to send a factory mechanic to supervise the first installations because of the small amount of business likely to be developed, and for the same reason neither of the prospective agents in these cities felt justified in spending the money to go to the factory for training. Therefore the parties concerned relied wholly upon printed instructions and correspondence, each of these agents, or dealers being given the very same kind of information.

The agent in one of these cities, working only part time, sold and installed nine stokers within a period of a few weeks. He corresponded very fully with us about each installation and made a complete success of every installation.

The other agent was the best known firm of electrical workers in their city. They put in one stoker, were unable to make it work, so of course the owner was dissatisfied and refused to pay. The agent took the stoker out, although they had paid the manufacturer for same; put the machine in their basement, and turned their thoughts to other matters, without ever writing a line. It was not until the manufacturer had written four letters over a period of sixty days that finally the facts as just given were brought out.

Now this second agent sincerely believes, no doubt, that the stoker he handled is no good, whereas we know from our own experience and from that of the agent in the other nearby city that the trouble was entirely the incompetence of the second agent or his unfamiliarity with stokers or with domestic heating problems.

Here is another incident. A firm in a city of about twenty-five thousand people, located in the Middle West, took on the agency for the same make of stoker. His first few installations happened to be easy ones, and he

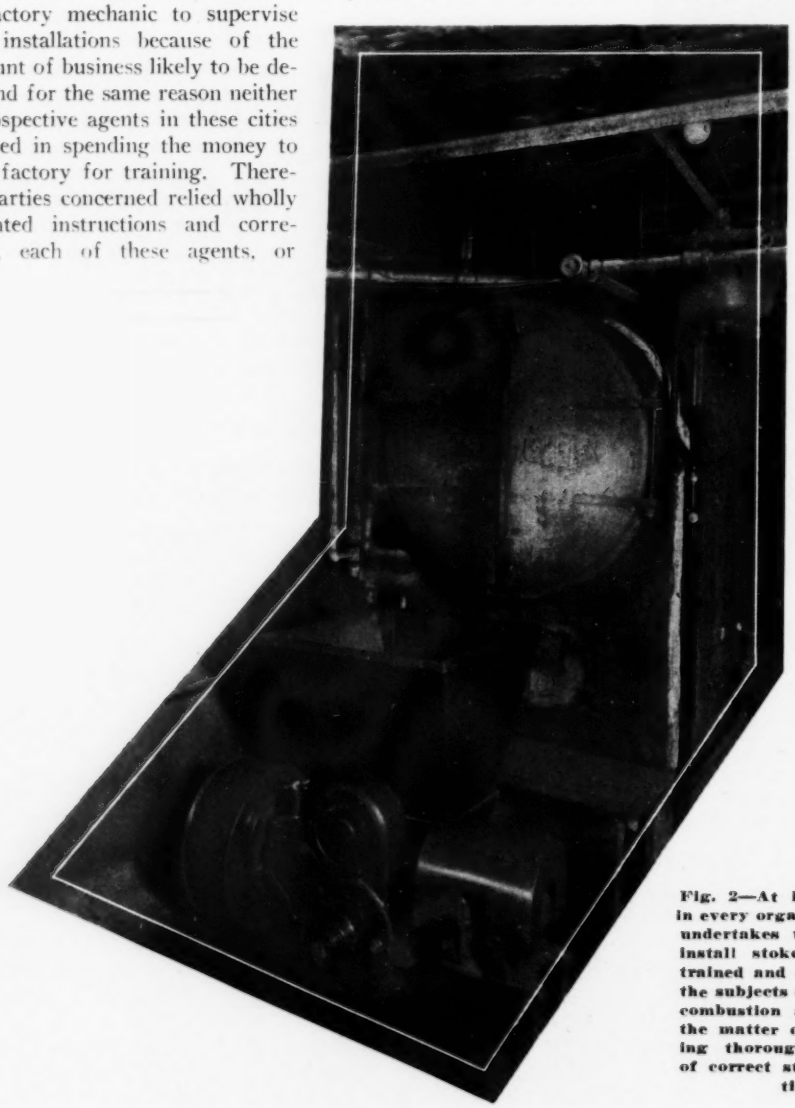
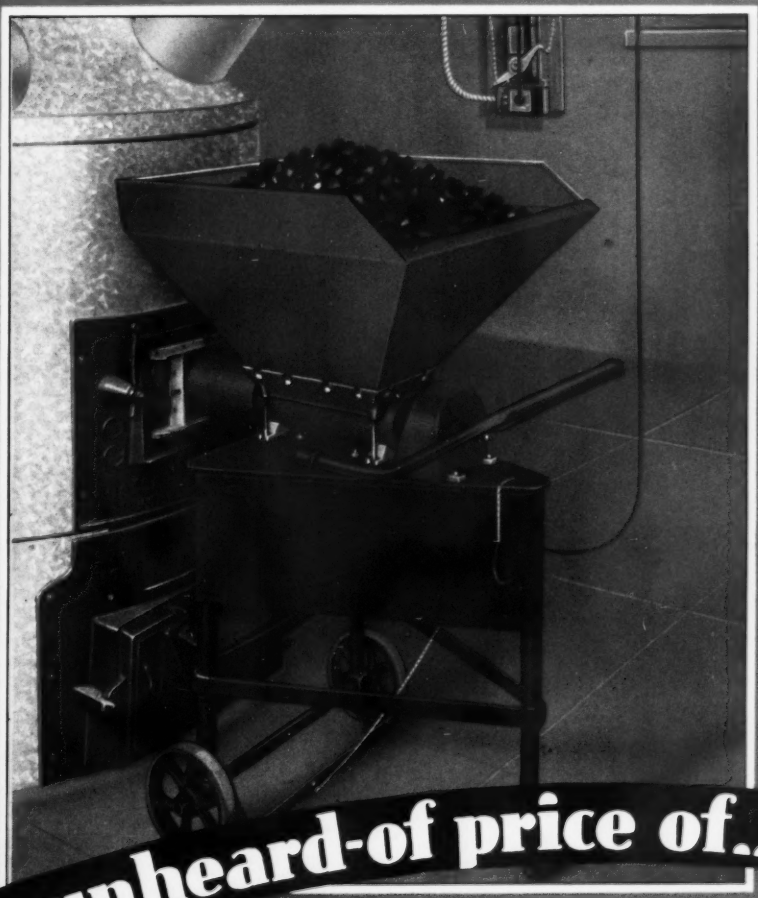


Fig. 2—At least one man in every organization which undertakes to handle and install stokers should be trained and experienced in the subjects of heating and combustion as well as in the matter of understanding thoroughly principles of correct stoker installations

Announcing the New

CROSLEY AUTOSTOK

An efficient electrically operated home furnace stoker with thermostat and panel controls, selling for half, or less, than the price of ordinary automatic stokers.



for STEAM HOT WATER VAPOR *and* WARM AIR FURNACES

Maintains high-efficiency conical fire. Easily and quickly installed without any change in heating system. Wheeled to coal bin for filling.

Retails at the unheard-of price of..

$175.00

Western and Canadian list prices slightly higher.

COMPLETELY INSTALLED
READY TO USE WITH THERMOSTATIC CONTROL

THE CROSLEY RADIO CORPORATION

Powel Crosley, Jr., *President* CINCINNATI Home of *"the Nation's Station"*—WLW

CROSLEY AUTOSTOK

Lowest in first cost . . .

Sells for half or less than the cost of other electrically operated stokers. Fully automatic and thermostatically controlled.

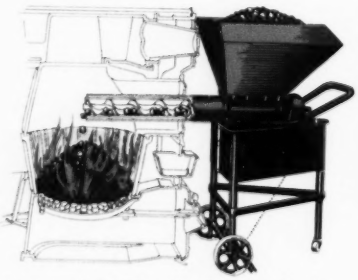
Readily salable . . .

Attracting that vast market of medium-priced homes where the average wage earner is interested in saving labor, health, money and adding comfort to his home.

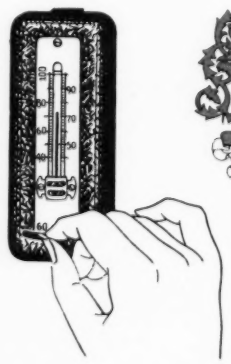
Note these outstanding features . . .

1. Installation time—Less than 2 hours for one man.
2. Can be used on boilers and furnaces with fire-pot as small as 12½ inches diameter up to 34 inches diameter inside measurements.
3. Capacity—200 pounds of hard coal or 140 pounds of coke in one filling.
4. Feeds common soft coal (no slack) semi-bituminous, smokeless or Pocahontas, anthracite or small coke.
5. Three feeding speeds care for various sizes of fire boxes—easy to adjust.
6. Maximum delivery of coal per hour is 40 pounds. Rate of delivery varies with different fuels used.
7. Approximate heating capacity—1400 square feet water radiation or 850 square feet steam radiation.
8. No noise or vibration.
9. Automatic safety control eliminating danger of damage to gears or motor should the feed screw become clogged.
10. Secondary air transmitted through a chamber around the four-inch feed pipe, cooling the feed screw and avoiding the possibility of burning it and permitting proper breathing of the fire.
11. Driving mechanism is simple, compact, trouble-proof, and rugged. Only six moving parts.
12. No return of smoke through hopper.
13. Standard equipment consists of:
    a. Stoker
    b. Control Panel
    c. Thermostat
    d. Extension Cord
    e. 30 ft. of Draft Chain
    f. 4 Draft Chain Pulleys
    g. 75 ft. of Thermostat Wire
14. Operated by ⅙ horse power motor and attractively finished in red and black enamel with cadmium plated wheels.
15. Low cost to purchase, low cost to operate.
16. Practically a smokeless operation.
17. Automatic temperature control.

You easily wheel the Crosley Autostok from coal bin to fire. No coal to carry—no dirt—dust.



Cross sectional view showing the Crosley Autostok in operation. Note how Autostok maintains a scientifically correct conical fire.



Maintain the desired temperature by merely setting the indicator at the degree of warmth wanted.

Get in touch with the distributor of Crosley Products in your territory. If you don't know him, write or wire direct . .

THE CROSLEY RADIO CORPORATION

Powel Crosley, Jr., *President* CINCINNATI Home of *"the Nation's Station"*—WLW

SPECIAL OFFER TO RETAIL DEALERS

So that you may have a Crosley Autostok in your own home where you can demonstrate it to your customers, all Crosley distributors are cooperating with the factory in offering you (for low price of $113.75 f. o. b. your city. In the West the special price is $122.20. This offer is not extended to the consumer, and is good only until January 1, 1932. Pin this coupon to your

Fig. 3—This is an exterior view of the building in which the stoker shown in Fig 1 was installed. Before undertaking an installation in an existing plant or even a new plant, all factors should be checked

Several specific instances are mentioned in this article. One tells how a stoker dealer followed instructions, studied his problems and made a success of all of his installations. Two other dealers are referred to who did not follow this course, with consequent failures. These merely serve to illustrate while an understanding of stoker principles and heating systems is essential, no problem will arise that cannot be solved.

became very enthusiastic. After he had installed fifteen or twenty stokers in all sorts of heating plants, he began to have trouble, and it was not until then that he would write any letters at all regarding his problems.

One of the officers of the stoker company stopped at his city while on a trip and inspected the installations that he had made. He found that every installation was faulty in some respect, and some were made in direct violation of instructions and rules furnished the agent. In one case a stoker was installed in a boiler of three times the capacity which had been given the agent as the limit. In another case, a customer of this agent was dissatisfied because the agent had made him promises far beyond anything he was authorized to make, and the stoker of course was not fulfilling these promises.

These rather random remarks will illustrate some of the difficulties that some dealers may have in handling and installing stokers. All of these difficulties can be overcome by an intelligent appreciation of what must be done to handle and install stokers successfully.

Wherever possible at least one man in every organization which undertakes to sell stokers should be trained and experienced in the subjects of heating and combustion as well as in the matter of understanding thoroughly all of the principles in connection with correct stoker installations.

We have found the problem in the past in burning bituminous coal has always been small combustion space. However, often the stoker overcomes a great many of the difficulties which owners have experienced in the old hand-firing methods. Consequently, boilers of given rated capacity can oft-times be boosted appreciably through use of the stoker.

On the other hand, of course, when the rate of heat transfer or thermo pressure is increased, old boilers that have been barely getting by under low thermo pressure conditions usually accompanying hand-firing, must sometimes be watched for leaks and bad beads in fire tubes, and such things normally occurring in the greater expansion and contraction of metal entailed with the higher temperatures which the stoker gives.

Difficulties outside of the boiler sometimes are found in leaky lines in the radiator systems, as well as leaky valves on the radiators themselves, which can increase the consumption of coal an unbelievable amount.

Heat Balance *in* Oil Burner Installations

By A. M. DANIELS

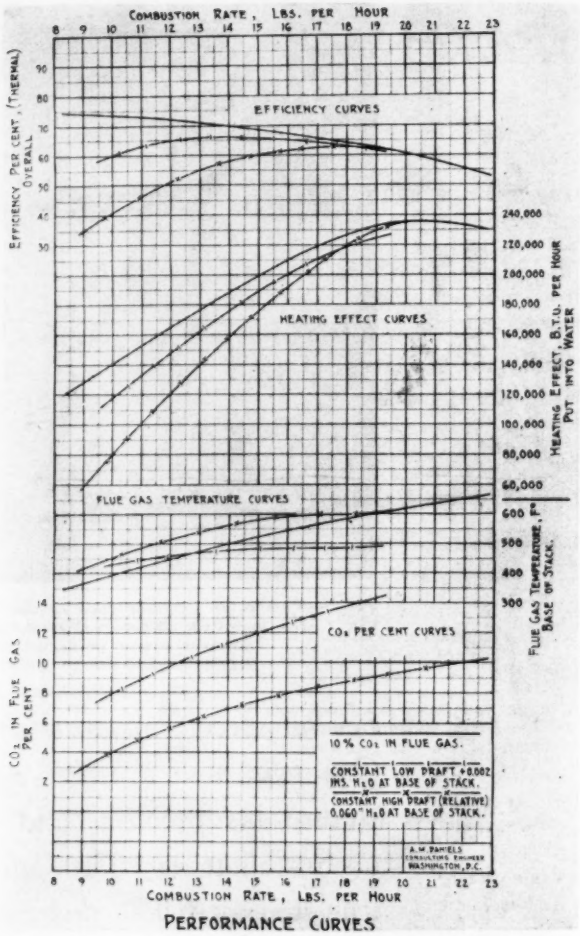
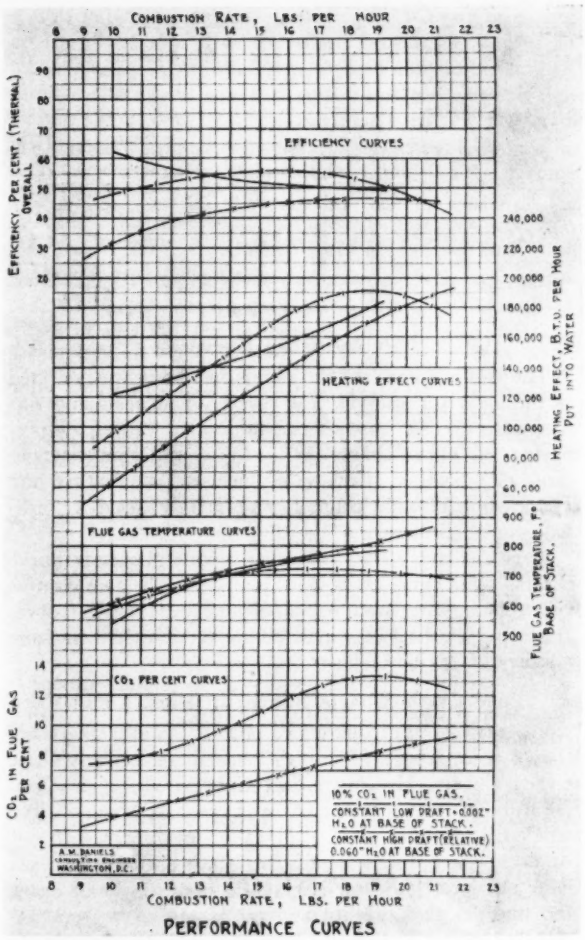

COMBUSTION RATE, LBS. PER HOUR
EFFICIENCY CURVES
HEATING EFFECT CURVES
FLUE GAS TEMPERATURE CURVES
CO₂ PER CENT CURVES
10% CO₂ IN FLUE GAS.
CONSTANT LOW DRAFT +0.002 INS. H₂O AT BASE OF STACK.
CONSTANT HIGH DRAFT (RELATIVE) 0.060" H₂O AT BASE OF STACK.
EFFICIENCY, PER CENT, (THERMAL) OVERALL
HEATING EFFECT, B.T.U. PER HOUR PUT INTO WATER
FLUE GAS TEMPERATURE, F° BASE OF STACK.
CO₂ IN FLUE GAS PER CENT
A. M. DANIELS CONSULTING ENGINEER WASHINGTON, D.C.
PERFORMANCE CURVES

Fig. 1—These curves show four of the variables which affect the operation of oil burners and in this instance, the results were obtained with the burner placed in a 6-section boiler. Notice that the topmost solid efficiency curve for 10 per cent CO_2 shows a highest efficiency at the lowest combustion rate and a lowest efficiency at the highest combustion rate. This is just the opposite of the two efficiency curves below it, where constant high and low draft respectively is maintained, up to moderate combustion rates

WHAT happens to the heat, is a question which naturally arises when an oil burner is installed. It is recognized quite generally that there are certain channels for the heat to follow. To start with, the fuel oil itself contains potential heat, the amount of which is a fixed quantity depending upon the properties of the oil. Next, the character of the burner, its installation and its operation determine how much of the potential heat contained in the fuel will be generated for use. Finally, the boiler and heating system controls the placing of the heat where it is wanted. From this, it is seen that even a casual consideration of the subject will indicate the many variables involved and the necessity of controlling them so that the heat generated will be directed where it will produce the greatest heating effect.

In order to make satisfactory oil burner installations and adjustments, it is important to know where the heat should go and what quantities should be directed in the several channels. For instance, some heat should go up the chimney but the home owner loses for his purposes the heat that follows this course. Therefore, how much heat can economically be lost in this way. Again, some heat will be lost in the basement from the boiler and flue pipe but the owner wants most of his heat to go where the radiators are placed.

For efficient operation of the entire system, the heat must not only be directed in the proper channels but the amounts should be proportioned correctly. This is worked out by the installation and adjustment and it is termed heat balance. Tests may and have been conducted to learn how this balance runs. These tests may range from the recording of stack temperatures in a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A.M. DANIELS
CONSULTING ENGINEER
WASHINGTON, D.C.
COMBUSTION RATE, LBS. PER HOUR

PERFORMANCE CURVES

Fig. 2—The oil burner was placed in a 4-section boiler and as a result, data was collected and used in preparing these curves. By comparing them with the curves shown in Fig. 1 a good idea may be obtained regarding the effect of increased flue travel or number of sections, on oil burner performance. All values for efficiency are lower in Fig. 2 than in Fig. 1. Also, the heating effect curves are lower and the flue gas temperature curves are higher. The 4-section boiler absorbed less heat from the flue gases

field job to the complete investigation with laboratory precision of all measurable losses. Regardless of the extent of the test required and conducted, it is well to know what a complete investigation or heat balance includes. Therefore, there are reproduced in Tables 1 and 2 the results of one section of some work which recently was carried on by the United States Department of Agriculture. Table 1 shows the heat balance for a number of test runs where one pound of fuel oil was burned during each test. The boiler in which the oil burner is installed was 25 in. in size being a round, 6-section hot water heating boiler from which the grates and shaker bar were removed. Referring to Table 1, the first item at the left, namely heat imparted to tank water indicates the number of Btu. which were taken from the heat contained in the oil. In effect this is the usable heat which is transported to the radiators for the actual heating of rooms. As for the second item, the results showed throughout the test there was no loss due to moisture being in the fuel. However, this is an item to take into consideration when giving attention to a complete heat balance.

It will be seen that the heat lost through the chimney is a very appreciable amount. The last item, namely, total heat value of fuel as fired, indicates the Btu. content of the fuel oil.

Table 2 shows the heat balance for each test on the basis of per cent of heat in the fuel as fired. From this, it is seen that for the first run, the per cent of heat imparted to the water or the thermal efficiency of this particular set-up amounted to 69.4 per cent. One-tenth of one per cent of the heat in the oil was lost due to the moisture in the air and 7.4 per cent was lost as far as the owner was concerned, through the chimney. The largest single item consisted of convection and unaccounted for losses, which, in the first run, amounted to 13.8 per cent. Totaling all of these percentages, we find in the bottom line 100 per cent as the total heat value of fuel as fired.

According to these tables there were 8 definite channels in which the heat might go. Naturally, the most important channel or the one in which it is desirable to have the greatest amount of heat travel is the first one, namely heat imparted to water. Of course, the idea would be to have 100 per cent of the heat go this way but this is impossible.

There are a number of factors which affect the amount of heat imparted to the boiler water. With the equipment tested, referring to Fig. 1, the combustion rate in pounds of oil burned per hour exercises a considerable effect. The efficiency curves at the top of the chart indicate that there are certain combustion rates at which the boiler will absorb most heat. Three sets of efficiency curves are shown in Fig. 1 for three different operating conditions.

Table 1—Heat Balance—B.t.u. per Pound of Fuel as Fired

Test No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Heat imparted to tank water	13,345	14,297	13,875	13,166	11,728	10,470	10,764	11,601	12,659	11,984	11,716	9,916	6,850	11,071	10,764	12,562	12,873	13,286
Loss due to moisture content of fuel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loss due to moisture formed in burning H	1,363	1,370	1,402	1,458	1,509	1,534	1,434	1,416	1,434	1,446	1,483	1,494	1,409	1,447	1,472	1,392	1,421	1,450
Loss due to moisture in air	20	22	35	34	42	52	31	38	31	19	49	40	78	68	60	30	35	32
Heat carried away by dry chimney gases	1,431	1,545	1,669	2,314	2,924	2,987	2,046	2,199	1,838	1,536	3,238	4,243	5,592	4,066	3,994	1,558	1,718	2,003
Loss due to radiation from boiler and smoke pipe	418	444	369	406	389	372	381	331	307	306	423	463	459	410	380	382	373	319
Loss due to incomplete combustion of C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Convection and unaccounted for losses	2,659	1,558	1,886	1,858	2,644	3,821	3,692	3,650	2,967	3,945	2,327	3,080	4,848	2,174	2,566	4,011	3,515	2,845
Total Heat Value of Fuel as Fired	19,236	19,236	19,236	19,236	19,236	19,236	19,236	19,236	19,236	19,236	19,236	19,236	19,236	19,236	19,236	19,935	19,935	19,935

The uppermost, or solid line, shows the efficiency when 10 per cent CO_2 was maintained in the flue gas. It is apparent that for the 6-section boiler and burner combination the highest efficiency with 10 per cent constant CO_2 is at the lower combustion rate.

The second efficiency curve which is for operation with a constant low draft indicates that the highest efficiency was obtained at a combustion rate of 14 lb. per hour. Dropping down to the CO_2 per cent curve in Fig. 1, it is noted that for this combustion rate, the flue gas contained approximately 11 per cent CO_2. Correspondingly, the flue gas temperature ran approximately 480 deg. Fahr. at the base of the stack.

With a constant high draft (relative) at the base of the stack, the highest efficiency point shifted to a combustion rate of approximately 18 lb. per hour and for this condition the flue gas temperature increased to 600 deg. Fahr. and the CO_2 in the flue gas decreased to approximately 8½ per cent.

The length of heat travel has a great influence on the amount of heat which is absorbed by the water. This is obvious. The water naturally will absorb more heat as the time is increased during which it is exposed to the flue gases. To illustrate this scientifically, tests were run on a 4-section boiler of a similar type and size. The graphic results are shown in Fig. 2. As in the case of the 6-section boiler, with a constant 10 per cent CO_2 flue gas content, the highest efficiency occurred at the lower combustion rate. However, where this was approximately 74 per cent for the 6-section boiler at 10 lb. per hour, it ran only about 62 per cent for the 4-section boiler at the same combustion rate. Carrying the comparison further, at the maximum efficiency of about 56 per cent with a constant low draft for the 4-section boiler, the combustion rate was 15½ lb., the flue gas temperature at the base of the stack was increased to 720 deg. Fahr. and the amount of CO_2 in the flue gas remained approximately 11 per cent.

Performance Curves

The combustion rate in pounds per hour was selected as the basis for studying the results of all tests and was therefore used as abscissae or horizontal values for preparing the curve charts with (1) overall efficiency per cent, (2) heating effect, (3) flue gas temperature and (4) carbon dioxide content, respectively, used as ordinates or vertical values.

Curve Charts 1 and 2 are prepared as base curve charts, while curve chart 3 is an auxiliary or comparative chart, being prepared by superimposing certain curves from one of the base curve charts on those taken from another of the base charts.

Base Curve Charts Shown in Figs. 1 and 2

On each of the base curve charts 1 and 2 there are shown four groups of curves marked respectively, Efficiency Curves, Heating Effect Curves, Flue Gas Temperature Curves and CO_2 per cent Curves. The efficiency per cent scale is given on the upper left side of each chart, the scale of the heating effect Btu. per hour put into the water is given at upper right of chart, the flue gas temperature at base of stack on the lower right of chart, and the CO_2 per cent in flue gas on the lower left of chart.

The chart shown in Fig. 1 pertains to operation in a round boiler with fuel oil of (33.93 B°) gravity or a specific gravity of 0.8542.

The chart shown in Fig. 2 shows graphically results obtained in the same make and diameter of boiler but with a less number of sections and consequently a shorter gas travel using fuel oil of the same characteristics as for Fig. 1.

Operating Characteristics in a Six-Section Boiler

A study of the four sets of base curves shown on the chart in Fig. 1 shows operating characteristics of the burner in a round boiler, 25 in. in diameter, uninsulated, and built up of six sections.

Table 2—Heat Balance—Per Cent Heat in Fuel as Fired

Test No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Heat imparted to tank water (thermal efficiency, %)	69.4	74.3	72.1	68.4	61.0	54.4	60.5	60.3	65.8	62.3	60.9	51.5	35.6	57.6	55.9	63.0	64.6	66.6	64.3	63.4	57.7	39.9	44.9	51.1	49.5	60.1
Loss due to moisture content of fuel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loss due to moisture formed in burning H	7.1	7.1	7.3	7.6	7.8	8.0	7.4	7.4	7.4	7.5	7.7	7.8	7.3	7.5	7.6	7.0	7.1	7.3	7.3	7.5	7.4	7.1	7.3	8.0	8.1	7.6
Loss due to moisture in air	0.1	0.1	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.1	0.2	0.2	0.4	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.4	0.4	0.5	0.3	0.3	0.2
Heat carried away by dry chimney gases	7.4	8.0	8.7	12.0	15.2	15.5	10.6	11.4	9.6	8.0	16.8	22.0	29.1	21.1	20.8	7.8	8.6	10.0	12.0	12.9	16.1	28.7	25.9	16.8	18.6	11.7
Loss due to radiation from boiler and smoke pipe	2.2	2.3	1.9	2.1	2.0	1.9	2.0	1.7	1.6	1.6	2.2	2.4	2.4	2.1	2.0	1.9	1.9	1.6	1.9	2.0	1.6	2.3	2.3	1.7	1.7	1.8
Loss due to incomplete combustion of C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Convection and unaccounted for losses	13.8	8.2	9.8	9.7	13.8	19.9	19.3	19.0	15.4	20.5	12.2	16.1	25.2	11.3	13.4	20.1	17.6	14.3	14.3	14.0	16.8	21.6	19.1	22.1	21.8	18.6
Total Heat Value of Fuel as Fired	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

The key to the curves, given in the lower right corner of the chart, indicates the three general conditions of tests, namely a series, during which the percentage of carbon dioxide in the flue gas was maintained at approximately 10 per cent throughout each test; a series during which the flue damper was controlled so as to hold back the gases as long as possible before permitting them to escape into the smoke flue; and a series in which the flue damper was set wide open so as to operate with the maximum draft obtainable under the particular installation conditions.

Table 3

Comparison of Burner Operation with Fuel Oil at Two Rates of Fuel Consumption for Three Different Operating Conditions in a 6-Section Round Coal Burning Boiler. See Fig. 1

Combustion Rate Lbs. Per Hour	Operating Conditions	Efficiency (overall) Per Cent	Draft Base of Flue Ins. H_2O	Heating Effect	Flue Gas Temp. F°	CO_2 Per Cent
9	10% CO_2	74	+0.019	129,000	365	9.4
	Low Draft	56	+0.002	102,000	420	6.8
	High Draft	35	0.056	59,000	420	3.0
16	10%	67	0.004	210,000	540	6.1
	Low Draft	65	+0.002	200,000	475	12.7
	High Draft	62	0.069	191,000	580	7.9

In the series of so-called low-draft conditions, it should be noted that a slight back pressure was built up at the base of the stack equivalent to +0.002 in. of water.

Reference to the efficiency curves shows clearly the effect of draft on overall plant efficiency. The curve representing a constant condition of carbon dioxide content of 10 per cent in the flue gas is located well above the other curves, particularly for the lower combustion rates. The efficiency curve for conditions of highest draft intensity is considerably below the efficiency curve for a 10 per cent CO_2 content.

Data show the draft to have been lowest during the constant 10 per cent carbon dioxide series. At a combustion rate of 8.76 lb. per hour, the gases were held back in such volume as to build up a pressure of +0.019 in. of water. The actual carbon dioxide content of the flue gas for this particular test was 9.4 per cent.

Table 4

Comparison of Burner Operation with Fuel Oil at Two Rates of Fuel Consumption for Three Different Operating Conditions in a 4-Section Round Coal Burning Boiler. See Fig. 2

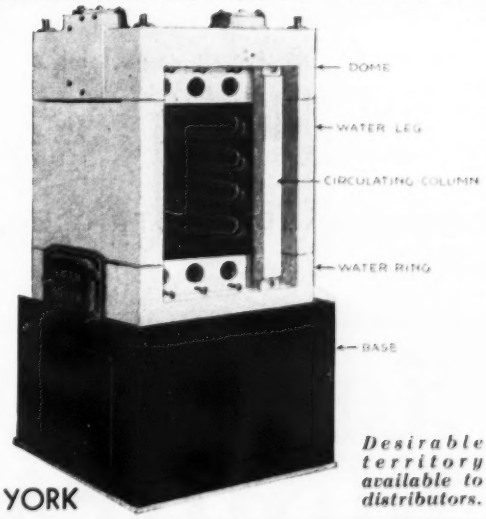
Combustion Rate Lbs. Per Hour	Operating Conditions	Efficiency (overall) Per Cent	Draft Base of Flue Ins. H_2O	Heating Effect	Flue Gas Temp. F°	CO_2 Per Cent
10	10% CO_2	62	+0.012	121,000	540	10.8
	Low Draft	48	+0.001	95,000	585	7.6
	High Draft	32	0.060	62,000	610	3.8
16	10%	51	*0.004	57,000	745	*10.0
	Low Draft	56	0.001	175,000	720	11.8
	High Draft	45	*0.056	140,000	765	6.8

*Estimated

Naturally, the heating effect curves occupy the same relative position to one another as the Efficiency Curves. As the combustion rate was increased, the heating effect increased until a rate of about 20 lb. per hour was reached when the heating effect increase began to fall off.

FORAN IMPROVED COPPER AND STEEL TUBE BOILERS
FOR OIL, GAS OR COAL BURNING
30% TO 50% FUEL COST SAVING

FORAN BOILERS SCIENTIFICALLY CONSTRUCTED for Oil or Gas fuels, obtain a rapid and positive circulation by circulating the water through a large number of small (¾ in.) "U" shaped copper tubes, connected with side circulating columns placed directly in the hottest part of the heat chamber, and so staggered that they absorb the heat from all sides, bringing the water to the steaming point or circulation, very much quicker than it is possible to obtain in a Cast Iron Boiler, where a large body of water must be heated.



The thin wall of the Copper Tubes and their greater heat conductivity permit the water to begin the absorption of the heat units the instant the boiler is lighted.

Due to the design of the combustion chamber, complete burning of oil or gas fuel is accomplished. The shape, size and air-tight construction of the fire box results in the highest efficiency and the greatest economy from the fuel.

FORAN BOILERS ARE ALSO DESIGNED WITH STEEL TUBES for coal burning, especially for AUTOMATIC STOKERS. They are interchangeable for either kind of fuel without any change in boiler construction. They will produce "More Heat" in a given time with a saving in fuel costs of from 30 to 50 per cent over the conventional type of boiler.

THEY COMPARE FAVORABLY IN PRICE WITH STANDARD MAKES OF BOILERS

Desirable territory available to distributors.

FORAN BOILER CO., INC. GENERAL SALES OFFICES 11 W. 42nd ST., NEW YORK

AUTOMATIC HEAT

SOMETHING TO SPARE

They do not assemble powerful motors capable of ninety miles per hour into automobiles because there is any general demand for ninety mile travel. They build excess power into such motors to "do" sixty miles with ease—ninety in a pinch.

Leland motors are engineered on the same principle. They, too, are extra sturdy—capable of considerable in excess of name-plate stamping.

Appliance builders are quick to recognize these claims. Consultation on particular requirements invited. In general use on stokers, oil burners, unit heaters, water systems, refrigeration, etc.

A. C. Repulsion Induction
D. C. Compound Wound
A. C. Polyphase
Interchangeable frames

1/8 1/6 1/4 1/3 1/2 3/4 1 1½ 2 3

THE LELAND ELECTRIC CO.
DAYTON · · · OHIO · · · U·S·A

Canadian Address Toronto

Cable Address "Lelect-Dayton"

Leland Motors

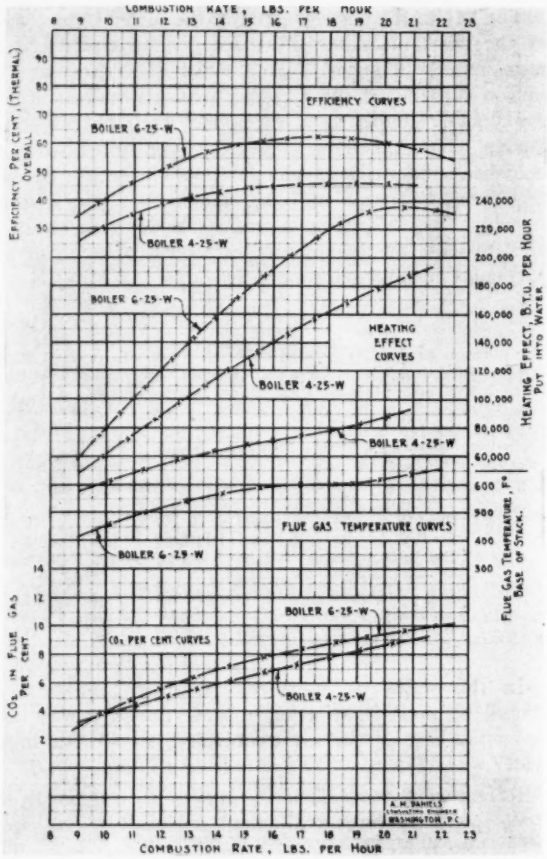

COMBUSTION RATE, LBS. PER HOUR
EFFICIENCY CURVES
BOILER 6-25-W
BOILER 4-25-W
EFFICIENCY PER CENT, (THERMAL) OVERALL
HEATING EFFECT CURVES
HEATING EFFECT, B.T.U. PER HOUR PUT INTO WATER
FLUE GAS TEMPERATURE CURVES
FLUE GAS TEMPERATURE, F° BASE OF STACK.
CO₂ PER CENT CURVES
CO₂ IN FLUE GAS PER CENT
COMBUSTION RATE, LBS. PER HOUR

Fig. 3—This set of curves shows the comparative performance of 4-section and 6-section boilers with the oil burner operating at a constant average draft at the base of the flue of 0.060 in. (approximately) of water for all of the tests. Notice that in the case of efficiency, heating effect and CO_2 content of flue gases, the 4-section boiler curves are below the 6-section boiler curves. Also, the flue gas temperature curves indicate that six sections are preferable to four sections

At this point, on the basis of the manufacturer's rating for this boiler (1,375 sq. ft. of hot water radiation), it was developing approximately 115 per cent of its rated capacity.

Flue gas temperatures were higher during the high draft (relative) tests with the CO_2 per cent considerably lower.

Table 5

Comparison of Burner Operation in a 4-Section and in a 6-Section Boiler with a Constant Average High (relative) Draft at Base of Flue (0.060 Ins. H_2O). See Fig. 3

Combustion Rate, Lbs. per Hour		10	16
Efficiency (Overall), per cent.	4-Section	31	45
	6-Section	41	62
	Increase for 6-Section	10	17
Heating Effect	4-Section	62,000	140,000
	6-Section	80,000	192,000
	Increase for 6-Section	18,000	52,000
	Per Cent Increase for 6-Section	29.0	37.1
Flue Gas Temp. F. Deg	4-Section	575	760
	6-Section	415	595
	Decrease for 6-Section	160	165
CO_2 in Flue Gas	4-Section	3.8	6.9
	6-Section	4.0	8.0

Capitalizing Customers for Oil Burner Sales

(Continued from Page 59)

Mr. Davis hopes that the time will come when oil burners will only be sold and installed by master plumbers or heating men who have a thorough knowledge of heating in order to prevent giving oil burners harmful publicity which has occurred so many times in the past due to the fact that the burner is installed in a heating plant which is not capable of taking care of the radiation. Many people are under the impression that the installation of a burner will cure the "cold" rooms and other defects of their heating plant of which

DAVIS & BOUBLITZ

MODERN—SANITARY PLUMBING

SUBURBAN AND COUNTRYWORK

902 W. 36TH STREET BALTIMORE, MD.

May 4th, 1931.

1st Prize - $10.00 Cash
2nd Prize - 5.00 Cash
3rd Prize - 2.50 Cash

For the best, second and third best testimonial letter from a BALTIMORE territory owner of a ( ) oil burner.

Just write us an ordinary letter, of not over five hundred words, telling us how long you have used your ( ). Whether yours is a hot water, hot air, vapor, or steam heating system. How the cost of operating your ( ) compares to previous methods of heating. How you like our service. That is all. Literary form will not count. Facts are what we want, told in an interesting manner.

Write your letter immediately, giving any details you think would interest a prospective purchaser. Entries must be mailed before midnight of Sunday, May 31st, 1931.

Simply address your letter to the writer, care of Davis & Boublitz, 1207 N. Charles Street, Baltimore, Md. Don't leave it until the last minute. There are three prizes. You have a chance equal to any. Remember some three persons in the BALTIMORE territory only, are going to participate in this prize money.

Very truly yours,
DAVIS & BOUBLITZ
Sales Manager

The call for testimonials brought generous response from owners

they have knowledge and unqualified men will ofttimes make promises of such corrections.

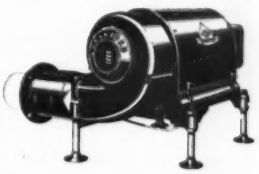
The physician's letter as stated above, brought an impressive response as I have already mentioned in the story, and Mr. Kelly of this firm believes this was due to the fact that the medical men are very hard to see personally. He cites a case where he made three visits to a physician during the regular visiting hours without being able to secure an interview, and at no other time could he reach him no matter how much he tried. This doctor was a good prospect and finally by using direct mail, the doctor called and arranged for an appointment. The prospect was sold.

Are You Selling

Trouble-Free Heating Service

or Just

Oil Burners?



IT SOMETIMES happens that a dealer permits his better judgment to be sidetracked by the lure of greater profits. He takes on the so-and-so oil burner and earns the profits—only to see them dissipated by repeated service calls.

The Branford Automatic Oil Burner, made by The Malleable Iron Fittings Company of Branford, Connecticut (founded in 1864), offers and delivers even, dependable, *trouble-free* heating service month in and month out, year in and year out.

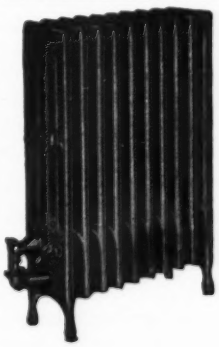
Holders of the BRANFORD franchise operate with complete confidence in their product, for they know that this Company stands squarely in back of every Branford Oil Burner sold, and back of the Company is a 67-year old reputation of fair dealing and dependable products.

We are interested in hearing from responsible dealers.

THE MALLEABLE IRON FITTINGS CO.
Dept. 40 Branford, Conn.

BRANFORD
OIL BURNER

AUTOMATIC HEAT



TESTING LABORATORY AGA APPROVED

AUTOMATIC GAS-STEAM RADIATORS

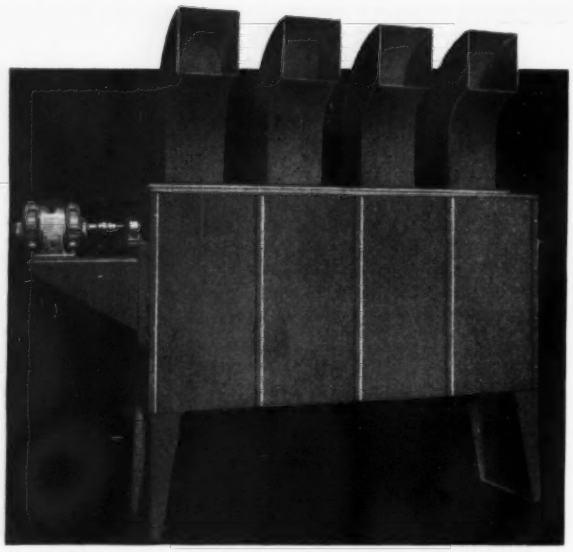
Here is heating equipment that really is modern. A radiator approved by the American Gas Association Testing Laboratories, that can be cut into the regular heating plant, used with it or as a separate heating unit.

Heat where it is wanted, when it is wanted at a remarkably reasonable original and operating cost.

See your jobber or write us direct

Automatic Gas-Steam Radiator Co.
BRUSHTON & THOMAS STREETS PITTSBURGH

AUTOMATIC HEAT



They are O. K.

ANY industrial heating problem can be solved successfully and with marked economy by the application of Clarage UNITHERM Unit Heaters.

The Clarage UNITHERM is equipped with centrifugal fans positive in action, and with a heating coil capable of pressures up to 200 pounds.

All parts of a UNITHERM are accessible. Both fan assembly and heating coil can be easily removed—no need to disturb either motor or steam and return lines.

The fans operate quietly, and are designed with a self-limiting horsepower characteristic.

The exterior of the unit is painted an attractive green. Its excellent, clean-cut appearance harmonizes well with the finest of factory surroundings.

You have undoubtedly overlooked the most modern heating equipment available, unless you have a Clarage recommendation on Clarage UNITHERMS. Capacities from 217,000 to 866,000 b. t. u., either suspended type, or floor type as shown above.

Write for full details. CLARAGE FAN COMPANY, Kalamazoo, Michigan. Sales Engineering Offices in Principal Cities.

CLARAGE
UNITHERM UNIT HEATERS

Automatic Heating Prospects

(Continued from Page 62)

Dailey, "and you'd be surprised how many shoppers will walk into a showroom if you display gas refrigerators, remodeled bathrooms and other equipment attractively. The other day a woman entered and without any sales urging whatever, she bought a gas refrigerator on which I made $33. She told me she had been watching the refrigerator in my window for three months and finally bought it." Dailey changes his window trims regularly, but he always window displays gas appliances in one position or another.

The gas company pays 25 per cent commission on co-operative sales in this territory and Dailey says that the wise plumber will co-operate with the gas company that plays fair.

Two Gas Boiler Sales—One Day

Mr. Dailey has made ten gas boiler installations this year so far, and considering the territory, this is a good showing. When we interviewed him, he had made two gas boiler sales that very day and expected another one the next week. He digs up his own leads and does not wait for the gas company to put orders in his hands, although they frequently tip him off to live prospects.

Just now Mr. Dailey has six journeymen working. They keep busy plumbing and heating summer bungalows, installing the gas appliances sold and doing general jobbing work, also new work. He plays safe with new work, however, keeping within the one and two family house class and demands payments as they fall due, otherwise, he stops until he gets paid. Three payments are due on every construction job, when the roughing is completed, when the fixtures are set and when the final job has passed satisfactory inspection. In this way, Mr. Dailey can get stuck on only one payment and he makes amply sure that the credit risk is a good one before he starts, so his chances for loss are at a minimum.

Notice the exterior of Dailey's showroom. See how he plays up gas fuel—for heating, cooking, refrigeration and hot water. The window trims contain a remodeled bathroom, a gas refrigerator, gas ranges, small gas boiler, small accessories, cleaning compounds and drain pipe solvents. Not only is this contractor making plans to open an additional showroom, but he will soon increase the size of this one by tearing down a partition in the rear, which will give him 300 more square feet of space. His floor is overcrowded just now with everything from gas boiler to toilet seats, but he says that an adequate assortment of merchandise is necessary to sell the woman and most of his showroom customers—walk-ins—are women.

Mr. Dailey does tiptop work and gets tiptop prices. He says that getting profitable installation fees does not affect his merchandising sales.

Henry Dailey has been a master plumbing and heating contractor for more than twenty years. He has run a showroom for five years and says that he made more money during this period than ever before. As he puts it, "The plumber who uses some horse sense plus horse power will find that a retail outlet is a profitable investment."

Home Owners want you to Stop Shovel Drudgery *for them!*

THIS CONSTANT "nursing" of heating plants, watching over a fire in the early hours of the morning, wondering whether the fire will last all day or whether the housewife will allow it to go out or put it out with inefficient attention — these are a few of the inconveniences of hand fired heating plants that home owners want you to end for them.

They want to have the assurance of even, comfortable, economical heat. In a word, they want automatic heat: oil burners, stokers or gas heat and their accessories.

They want *you* to sell these things to them because they know they can depend upon your experience as a heating man and your responsibility as a business man to select, sell, install and keep sold some automatic heat device that will meet their individual needs.

AUTOMATIC HEAT in the pages of Domestic Engineering will keep you informed on every important merchandising, technical and financing development in this phase of your work.

We solicit your further inquiries on any automatic heat question.

AUTOMATIC HEAT

in

Domestic Engineering

1900 Prairie Avenue ✦ ✦ Chicago, Ill.

AUTOMATIC HEAT

TO-DAY PEOPLE BUY SERVICE
---AND THEY ALWAYS WILL

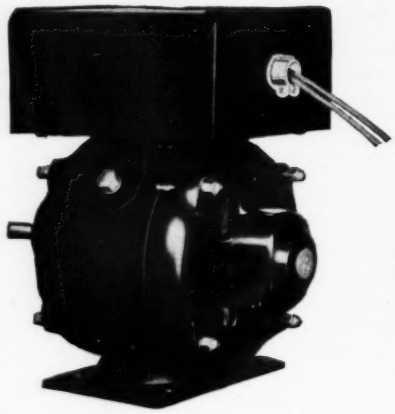
Give your automatic heating system the added value of a G-E MOTOR

◆ ◆ ◆ ◆ ◆

TO-DAY—and always—your prospect will be considering service. He will be thinking in terms of convenience and comfort, in pride of ownership and value—in dependability.

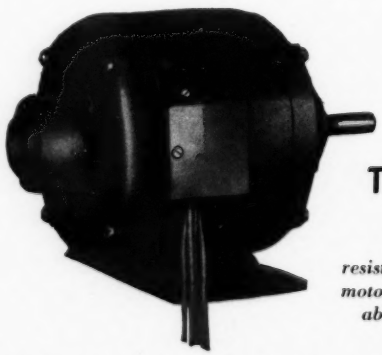
Why not give him the best . . . now? Consider a General Electric fractional-horsepower motor. For nearly thirty years, General Electric has been designing, manufacturing, and applying fractional-horsepower motors to every type of motorized device. What does this mean to you? Simply this: the drive that bears the G-E monogram will have performance characteristics which match your automatic heating system—it will exactly meet the torque requirements, high, medium, or low, and it will give your product that additional acceptance already accorded G-E equipment everywhere.

Give your automatic heating system the asset of a G-E motor; motor specialists in your nearest G-E office will be glad to work with you in the solution of your drive problems.



THE TYPE KC

"care-free" motor with capacitor-transformer unit. Also available with separate capacitor unit



THE TYPE KH

resistance split-phase motor equally dependable and efficient

JOIN THE "G-E CIRCLE"—SUNDAYS AT 5:30 P.M. E.S.T. ON N.B.C. NETWORK OF 54 STATIONS—WEEK-DAYS (EXCEPT SATURDAY) AT NOON

210-156

GENERAL ELECTRIC

SALES AND ENGINEERING SERVICE IN PRINCIPAL CITIES

Fig. 1—Above is shown a properly constructed chimney as far as the clean-out doors are concerned. The pile of dirt on the floor is one year's accumulation of soot and fly ash intermingled with mortar which was dropped in the base during the construction of the chimney

We find the best way to locate chimney troubles is to run down a list of possible reasons and scratch off those items which we are sure could not be the cause. Such a list is included in this article from a contractor on

Keeping the Chimney in Shape

By . . . . . C. B. MAGRUDER

WE STARTED out to be heating contractors, not chimney doctors, but force of circumstance caused us to acquire an invaluable, although at times a very black and sooty knowledge of flues, and now we consider ourselves eligible for either calling. It was necessary for us to learn about chimneys in self-defence, for ninety-nine out of a hundred will blame smoke trouble on the heating appliance, seldom if ever on the chimney, and we found our heating plants being condemned when the trouble was in the flue.

Nothing can prove more of a nuisance and an annoyance to an owner than smoke trouble, and the practical knowledge of chimneys and flues which we have gained by actual experience has often stood us in good stead and made fast friends and staunch customers for us.

Almost anyone you ask will offer you a remedy for smoke trouble without the least first hand information as to the flue in question. Snap judgment will suggest that you extend the flue higher, that you clean the flue. An engineer may get a reading from a draft gauge that will tell you that a chimney lacks draft, but he may not be able to point out a practical way to go about getting it. Builders know little about flue conditions, nor do bricklayers, although they build practically all of the new flues. The mere fact that so many chimneys are poorly built to start with is an indication that many bricklayers and building contractors know little of draft conditions. A steamfitter who has had a wide experience with boilers and an excellent opportunity to study flue conditions can rarely be trusted to correct smoke trouble unless it is in the boiler itself. On the other hand a chimney man may spend a lot of time on the chimney when the trouble is in the boiler. It is therefore a good combination to know both.

The prime requisite in correcting smoke trouble is a dogged determination to find the trouble, for often it is

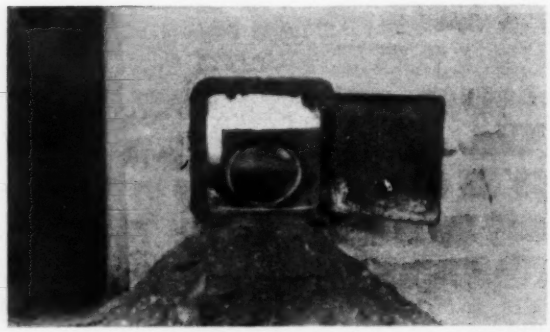


Fig. 2—This shows how a mirror may be placed in a chimney to see the condition of the flue

obscure and hard to locate. We find the best way to go about it is to run down the list of possible reasons and scratch off those items which we are sure could not be the cause, and in most cases there will be only one or two possibilities left. We have found the principal reasons for poor draft are as follows:

1. Improper assembling of boiler.
2. Flue area too small.
3. Loose fitting dampers that do not stay in proper position.
4. Improper timing of the draft and check dampers.
5. Air spaces between smokepipe and flue opening.
6. Smokepipe extending too far into the flue.
7. Lack of cleanout pocket at base of flue which helps to create a stoppage at the smokepipe opening.
8. Other heaters or grates vented into the same flue.
9. Air leakage, usually found in attic space where it is seldom looked for.
10. Air leakages between flues, if there is a dividing wall.
11. Insufficient height.
12. Too long a smoke pipe.
13. Too many bends in smoke pipe.
14. Fuel.

In our experience the rarest causes of trouble have been insufficient area, insufficient height, too long a smoke pipe, too many bends in smoke pipe, and fuel, whereas the greatest difficulties have come from air leakages at one point or another. Lack of height, lack of area, and poor fuel get the most of the blame, when, as a matter of fact, those three items cause the least trouble, the grade of fuel very rarely giving just cause for complaint.

During the past week we have had two complaints of smoke trouble in new houses where we completed installations of heating plants this summer. In each case the owner wanted to place the blame on the boiler, for it is hard to realize how a new chimney can cause trouble. In one case we found a couple of boards and some broken tile obstructing the passage, evidently tossed there by a careless workman in a hurry to clean up and get away from the job. In the other case was leaks, but the owner is yet to be convinced that leaks are the cause and has not authorized us to go to the source of the trouble. He insists that there is something wrong with the boiler for the very illogical reason that smoke comes out around the doors. He wants to add height to the chimney, but it has sufficient height and plenty of area. We cannot make him understand how there could be leaks in a new chimney. Well, he doesn't know chimneys as we do!

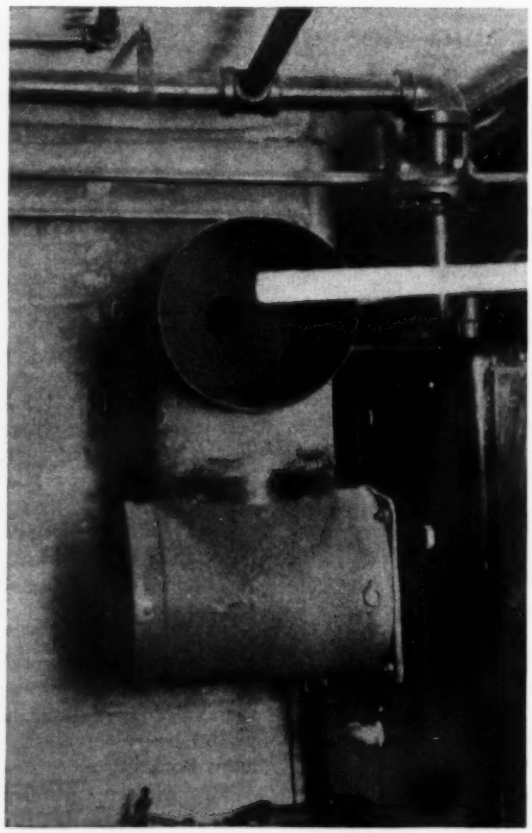


Fig. 3—In this case, an excessive fuel bill was the complaint because of too much draft. The damper shown provided the solution. The end of the flue pipe is removable for cleaning. Notice that the damper handle correctly indicates the position of the damper. More than one trouble job has been traced to handles not doing this

It is to be hoped that every contractor has inserted in his specifications a clause stating that "a chimney of sufficient size and draft shall be furnished by owner." Such a clause relieves us of legal responsibility for a chimney, but if trouble develops, we try to locate the source of trouble, for our customer, and either remedy it for him, making a nominal charge for repairs, or else superintend the work of a chimney man.

Over a period of a year, we install hundreds of various types of heating equipment, a large number being circulating heaters and small heating plants in cellarless houses, and heating plants in old homes where adequate

well-built chimneys are not always available.

One such heating plant in a cellarless home was our first real cause for chimney doctoring. The plant had been in about a week when it began to smoke. The owner jumped on us with both feet and to escape alive we called in a so-called chimney man who cleaned the flue and tinkered around at it in various ways, all of which would improve it for a few days, and then it would choke up again as bad as ever. The owner finally lost all patience, condemned the heating plant, wanted it torn out, and made life so miserable for us that we dreaded to hear the phone ring for fear that it was he calling once more.

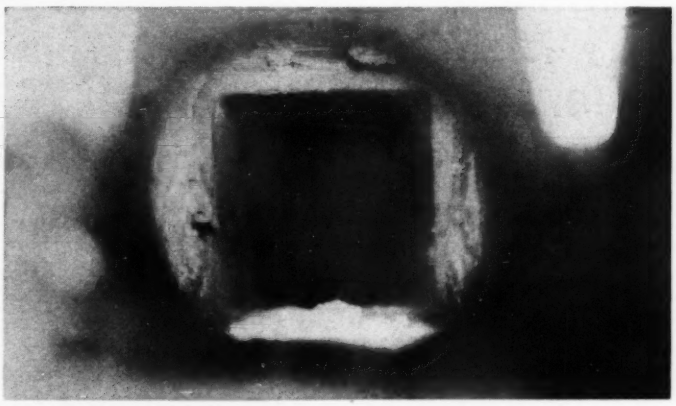


Fig. 4—This is what the mirror in Fig. 2 showed. The flue pipe is seen at the top and is correctly installed. Notice how the smoke is coming out of the flue

We cited him instances where similar equipment was working efficiently on the same sized flue, but he would have none of it. He wanted the equipment taken out and his money back. It was up to us to do something about it and do something quick if we did not want the whole town to know of the trouble he was having. We went out to his house equipped with a mirror (mirrors had heretofore not been a part of our standard equipment, so we lifted this one from a dressing table at home) a long rope, ladders, and other paraphernalia necessary to our new trade. On investigation we found numerous small leaks in the chimney, and where the chimney passed through the attic space, between the second floor ceiling and the roof, we discovered in the tile lining of the flue, a hole big enough for a man to get his head through. We repaired this break, started a fire, the heater drew, there was no smoke, and the owner was so pleased that, black as we were, he invited us in to clean up in his best bathroom and to talk the matter over with him. We felt pretty good about it ourselves, but we were not throwing any bouquets at each other until the flue had been put to a thorough test, and we were sure there were no other leaks. It continued to draw perfectly and is doing so today.

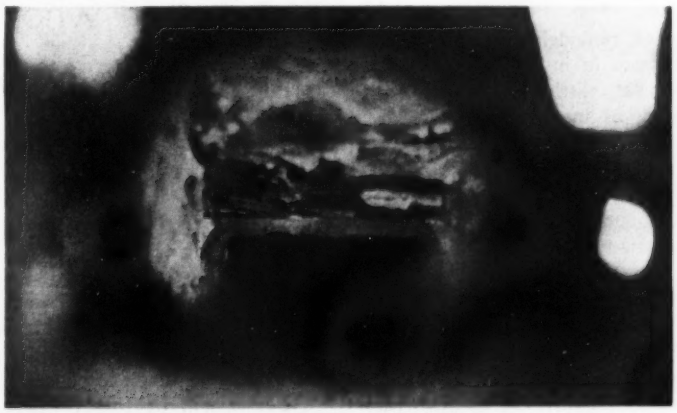


Fig. 5—Another view taken through the mirror of Fig. 2. This shows how the brick mason, when he built the chimney, saved on flue lining by not running it to the bottom of the chimney. Instead, he started it only about 4 in. below the flue pipe opening. This is very poor practice because of the possibility of leaks developing in the lower brick work

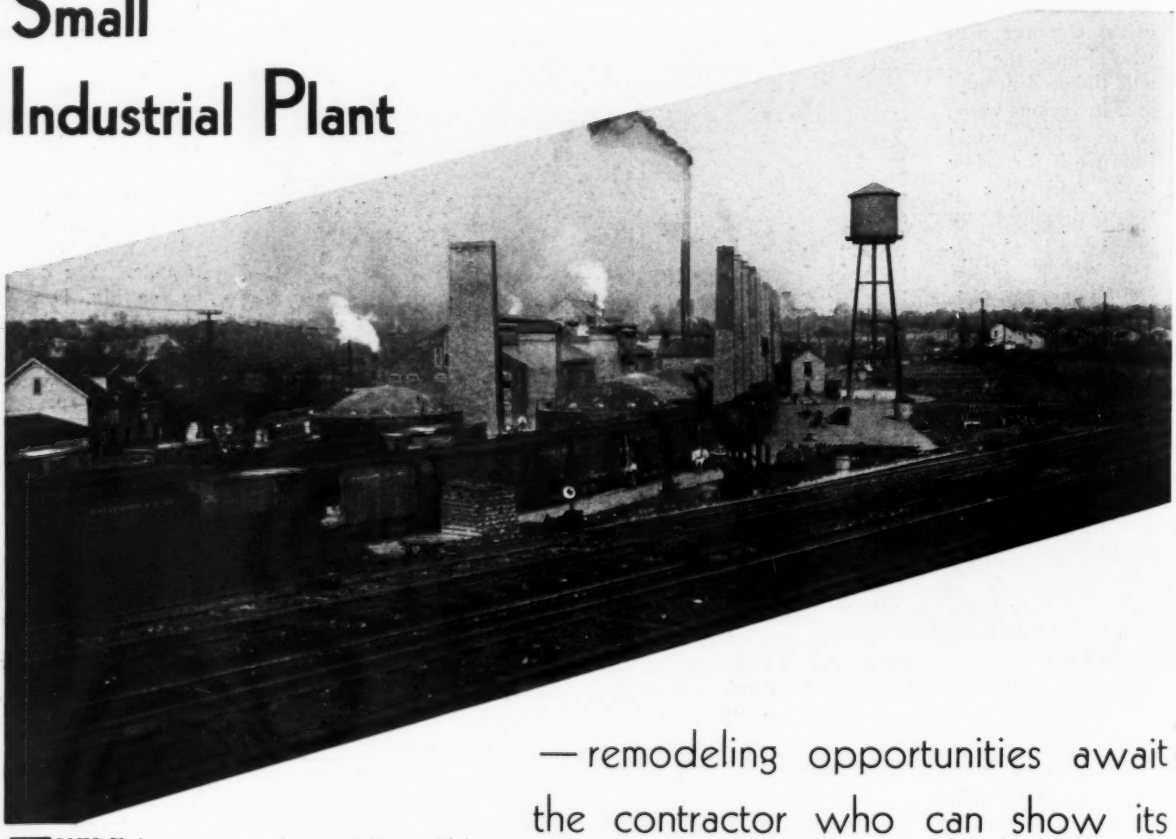
Since then when making a survey for an estimate on a heating plant, we never overlook the chimney, and we make a report of its condition to the owner, so that he will know ahead of time if it is likely to need repairs. Such foresightedness has sometimes lost us a contract, but it has saved us more in the long run than we have lost.

While doing work on a heating plant in a small country town, we were told that Mr. DeWitt, one of the town's first citizens, had been annoyed for years with smoke trouble. We called to see Mr. DeWitt who readily agreed that he had smoke trouble all right, but that he had spent so much in an unsuccessful effort to remedy it, that he did not intend to spend a penny more. To that we came back with the proposition that we would charge him nothing unless we corrected the trouble, but if we did correct it we would expect a substantial amount, naming the sum, and he gave us permission to try.

We checked his boiler and chimney against our list of known causes for smoke trouble and decided that it was leaks again. To substantiate this decision, we put on a smoke test, building a smoky fire and covering the top of the chimney. Soon the boiler room filled with smoke but there seemed to be no leakage elsewhere. We started investigation, therefore, in the basement. Holding a lighted candle to a crack in the chimney base, the flame sucked in. We stopped that leakage and looked for others. It developed that the entire ten foot wide stone wall of the cellar formed the base of the chimney, and in this wall was just one small leak after another. One, in itself, did not amount to much, but together they would have formed a hole big enough to affect the draft on two or three chimneys. We patiently cemented each leak, and when we had finished this work in the basement our work was complete, for the chimney was in good condition otherwise, having been worked on so many times but not in the right place.

(Continued on Page 123)

In the Small Industrial Plant



—remodeling opportunities await the contractor who can show its owners that his services will result in more efficient operation

By H. L. ALT

THERE is one type of remodeling which holds infinite possibilities in industrial localities about which very little has been said. This is the revamping of small industrial plants which now are operating with inefficient or obsolete apparatus. These remarks apply especially to the coal pile and the heating and ventilating. It is without doubt the truth when it is said that no manufacturing plant over ten years old is operating as efficiently and economically as it might and it is probably equally true that no plant would be built today along quite the same lines as were in common use even five years ago.

The hot blast system of factory heating is still in operation in hundreds of manufacturing plants without any means of temperature control which is automatic. A great many such installations are without recirculation. Quite a few have to be operated a large part of the night before in extreme weather in order to bring the building up to temperature before the employes arrive in the morning and some do not hit 70 deg. Fahr. until 10 or 11 o'clock on cold days. Numerous other factories are heating with direct radiation without the slightest attempt at temperature regulation and are forced to overheat in some sections in order to keep the less favored exposures comfortable. Some are generating their own power and heat when they could buy current and use low pressure steam for heating at a considerable saving, while others are generating a lot of steam for heating and purchasing power which could be generated much less expensively.

Plants will be found where the old perforated pipe and slab urinal is using a large quantity of water which might be saved. Others are using a large quantity of water for cooling, condensing or testing work and then are throwing this water away, at the same time buying additional water to operate their plumbing fixtures. Still others have a constant discharge of exhaust steam coming out of their exhaust heads and are using live steam to heat water or for other purposes for which the exhaust steam is perfectly suitable. Leaking traps, imperfect valves, uninsulated steam and hot water lines are only a few of the items where economies may be effected. As a concrete example of what can be accom-

CAPITOL 914 SINK FIXTURE

For the moderate priced home, where costs are a vital factor, this Capitol 914 Sink Fixture presents a neat, dressed-up appearance and at a very reasonable price.

Nickel plated, the handles and soap dish are of china. Metal handles and metal soap dish can be supplied at slightly increased cost. With drain at rear, the soap dish sets well down between the handles on a short, securely fastened stud. 8 inch centers with female eccentric or male adjustable couplings.

A true Capitol fixture throughout, it is a remarkable value. Workmanship equals that of our highest priced sink fixtures.

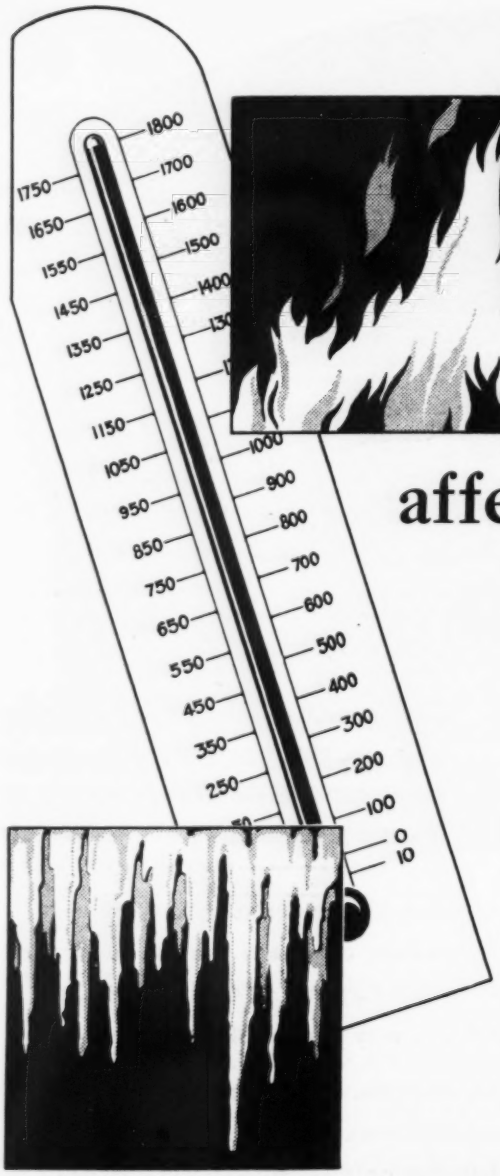
The complete line of Capitol plumbing fixtures is handled by the leading plumbing supply houses. Install them and insure customer satisfaction.

Bohn Aluminum & Brass Corporation

CAPITOL BRASS DIVISION

MANUFACTURERS OF BRASS VALVES, BOILER TRIMMINGS AND PLUMBERS' BRASS GOODS

DETROIT~MICHIGAN



Neither *Fire* nor *Frost* . . . affect the HAYS fitting

WHEN you sell the Hays Copper Plumbing Method you sell more than neatness, economy and long life. You practically insure the plumbing system against the ravages of fire and freezing. The illustration at the left indicates the performance range of plumbing done by the Hays Method.

To know that Hays Double Seal Connections will stand up under repeated freezings, remain leakproof at highest temperatures, withstand severe shock and constant vibration, hold tight against twisting and pulling strains is to be sure that you are safeguarding your good work for all time, as well as giving permanent protection to your client's beautiful interiors.

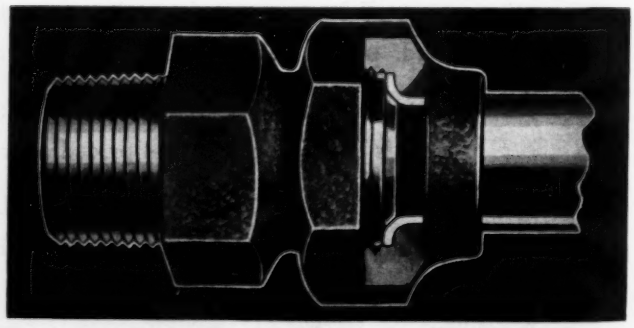
Using the Hays Copper Plumbing Method is just good business for any plumber who wants to build more business later by pleasing every customer he works for. Write for Catalogue Section 3.

HAYS MANUFACTURING CO., ERIE, PA.

10° Below to 1800° Above

We know that the Hays Double Seal Connection will remain leakproof up to the fusion point of the metal which is 1800 degrees C.

We conducted a series of 7 successive freezing tests in a refrigeration room which revealed that the Hays Double Seal Connection, under 100 lbs. water pressure and plugged at both ends would stand up under the lowest obtainable temperature which was 10 degrees below zero.



DOUBLE-SEAL HAYS CONNECTIONS

plished along this line a couple of actual plants will be considered as indicating the field which the average ten-year-old plant offers for this line of work.

The first of these plants was one in which the making of pipe fittings, water devices and some miscellaneous manufacturing was carried on. It consisted of a main building (in which the offices were located in the front portion and light manufacturing was carried on in the rear), a machine shop, an iron foundry, a brass foundry

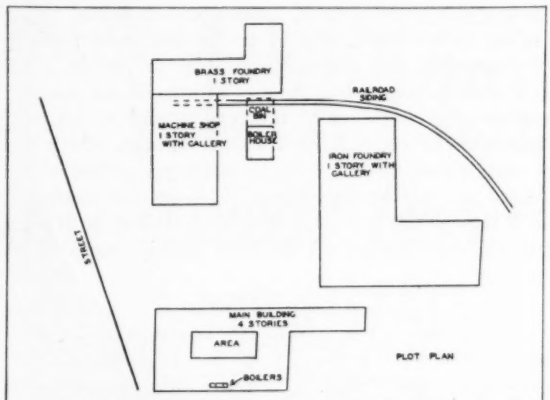


Fig. 1—Approximate plot plan of industrial plant which presented remodeling possibilities

and a few small buildings which have no importance to the matter under discussion. The brass foundry, iron foundry and machine shop all were heated by the hot blast method while the main building employed direct radiators without any type of temperature control. The main building had its own heating boilers, but all of the rest of the plant was heated with high pressure boilers located in a main boiler house placed approximately in the center of the yard. Some of the high pressure steam was used to operate an air compressor and to run a small engine which carried part of the electric load for the plant, the balance of the electric current coming in through a motor-generator set. Thus it will be seen that two steam plants were being kept in operation and that power was being developed inside the plant and was being purchased outside as well.

In Fig. 1 an approximate plot plan is shown of this industrial development. The main building is a building constructed only recently and has its own boiler plant as located thereon. This building is of reinforced concrete construction with the usual large glass areas of modern shop construction; there are no fans in this building. In the machine shop the building is constructed as indicated in the typical cross section given

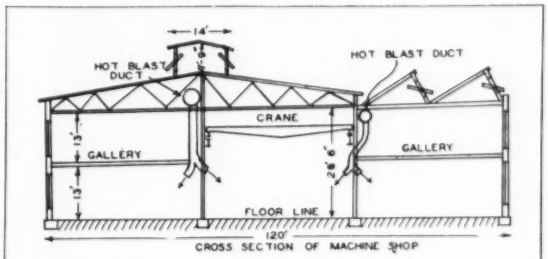


Fig. 2—Cross section of the machine shop showing the heating ducts

in Fig. 2, where the central portion is shown to be of monitor construction with a saw-tooth addition built on to the righthand side of the original building and with two galleries, one on either side. This section also locates the original heat duct (run down the middle of the original building and heating the whole building by the hot blast method) as well as the auxiliary duct (run down under the saw tooth) to take care of the addition constructed later.

In Fig. 3 is indicated the cross section construction of the iron foundry, with a wide middle bay (in which a crane operates but is not shown) and two narrower side bays in which the hot blast ducts are carried with drops down toward the floor at frequent intervals. On the lefthand side is located the iron cupola and charging floor for the cupola. The brass foundry is a much lower

Here is a good example of industrial plumbing. With conveniences such as these, the efficiency of workers should be increased markedly

building and is only about half of the width of the machine shop as shown in the cross section given in Fig. 4; two hot blast ducts are carried up and down this building with branches shooting toward the floor as shown. The heating in the main building is by wall radiators.

It was found that the heating in this plant was divided into two separate and distinct systems neither of which had anything to do with the other; of course this was not economy to begin with, requiring two forces to stoke the boilers and resulting in a divided capacity with which

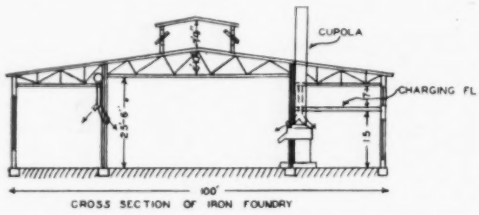


Fig. 3—This cross section indicates the construction of the iron foundry with the cupola and the charging floor

one system was unable to help out the other in case of emergency. Of course neither system had boiler capacity enough to carry the other system so that any cross connecting would involve not only the cost of the cross connection—which had to run a great distance—but also the additional cost of new boilers and the enlarging of the boiler house. This the owner was not willing to consider so an effort was made to improve what he had rather than toward rebuilding of the plant.

The equipment installed in the machine shop consisted of

1—110 in. fan driven by a 6 × 6 engine with a pipe coil heater, delivering 27,000 c.f.m. at 1¼ in. s.p.
1—No. 60 Type L fan driven by a 10 Hp. motor with pipe coil heater, delivering 13,500 c.f.m. at 1 oz. pressure.

The equipment in the iron foundry consisted of

1—80 in. fan driven by a 5 × 5 engine with pipe coil heater, delivering 14,400 c.f.m. at 1¼ in. s.p.
1—80 in. steel plate fan operated by a 6 × 6 engine, with pipe coil heater and delivering 14,500 c.f.m. at 1 oz. pressure.

The equipment in the brass foundry consisted of

1—multivane fan with pipe coil heater operated by 7½ Hp. motor and delivering 13,000 c.f.m. at 1½ in. s.p.

Steam was supplied from the boiler house being produced in two 150 Hp. water tube boilers with stokers at 100 lb. gauge pressure; this steam is run through an air compressor and a small electric generating unit after which it is carried over to the fan locations and used in the heaters as far as it will go. Where the fans are very far from the boiler room high pressure steam is carried over and used to supplement the exhaust when the exhaust is not sufficient. In the main building steam is generated at 15 lb. gauge in two 100 Hp. H.R.T. boilers equipped with automatic stokers for burning soft coal. There also are two 150 Hp. water tube boilers in the main building which are old boilers and are equipped with hand-fired grates. These are no longer used.

Where Costs of Operation Could be Cut

In looking over the plant with an eye to effecting economies the first thing which suggested itself was the fact that all the hot blast heating, except in one instance in the machine shop, was taking outside air all the time and was heating this air in an endeavor to heat the building. A great deal of steam could be saved by employing recirculation, and so an estimate was made up showing what the savings would be to put in a few recirculation ducts and to use inside air as much as possible. Investigation of the coal burned in the boiler house showed about 1,360 tons per annum, which with an evaporation rate of 8 lb. of water per pound of coal showed an annual production of steam for heating of 1,360 tons × 2,000 lb. × 8 lb. or 21,760,000 lb. of steam and an investigation of the heat requirements of the

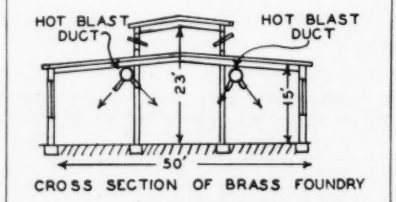


Fig. 4—The two hot blast ducts in the brass foundry are carried up and down the building with the branches pointing down

different buildings showed an E.D.R. load distribution of

	Sq. Ft.
Machine Shop	30,000
Brass Foundry	11,300
Iron Foundry	18,400
Pattern Shop (all direct radiation)	500
Total	60,200

and at 350 lb. of steam per sq. ft. per annum this gives a steam distribution of

	Lb.
Machine Shop, 30,000 × 350 lb., or	10,500,000
Brass Foundry, 11,300 × 350 lb.	3,955,000
Iron Foundry, 18,400 × 350 lb.	6,440,000
Pattern Shop, 500 × 350 lb.	175,000
Total steam used	21,070,000

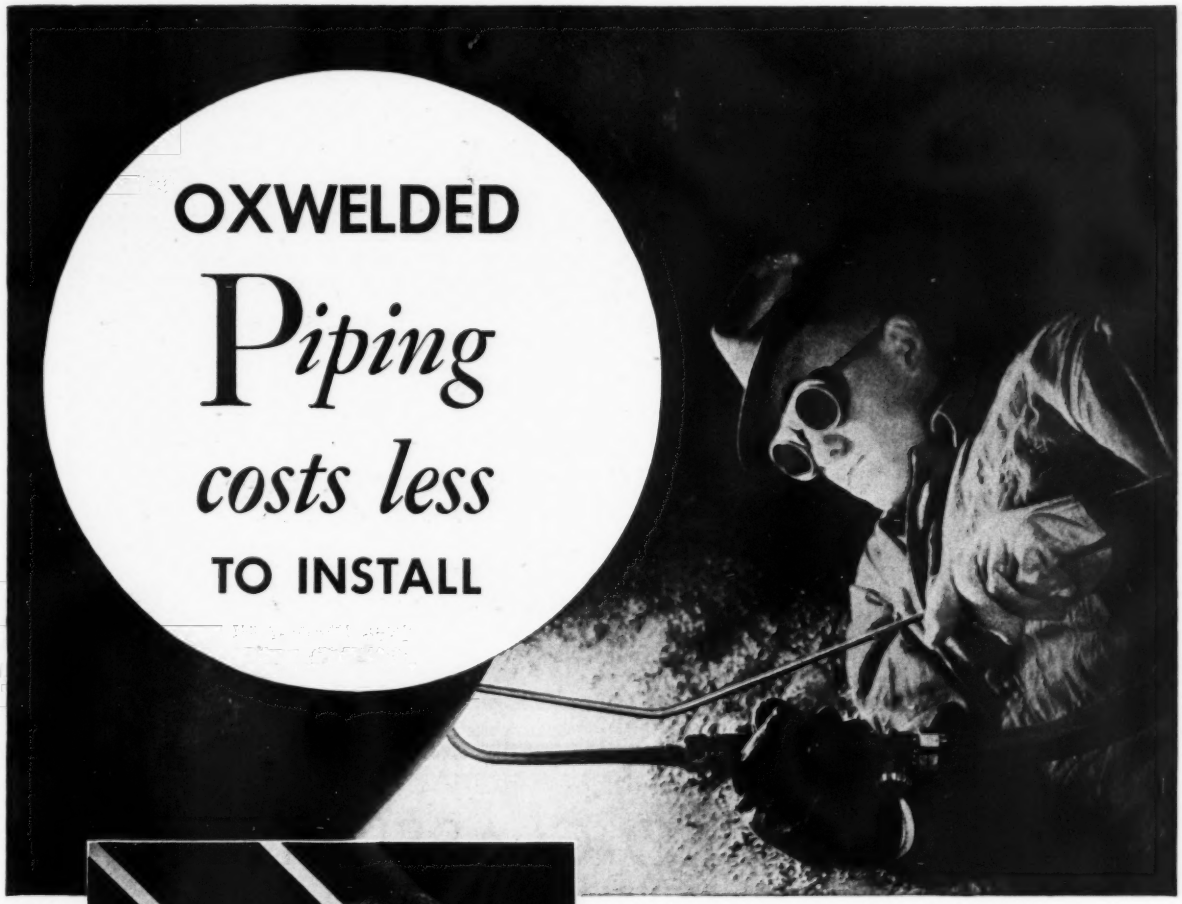
and this checks very closely with the steam actually produced, which already has been computed as being 21,760,000 lb. The cost of the steam per M lb. was obtained by dividing the cost of the 1,360 tons of coal by the number of thousands of pounds of steam produced, thus:

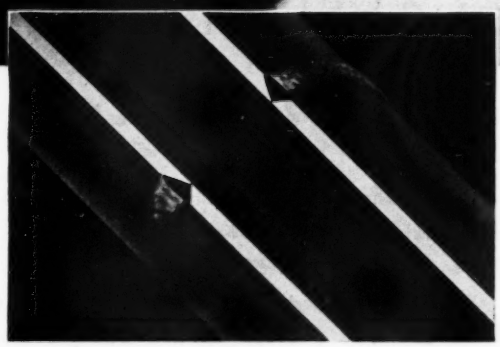
$$\frac{\text{Cost of coal}/21{,}760{,}000}{1{,}000}$$

or

$$\frac{\text{Cost of coal}}{21{,}760}$$

OXWELDED *Piping costs less* TO INSTALL





A series of motion pictures showing the fundamental principles of the oxy-acetylene process for welding and cutting metals, and typical applications of oxwelding and cutting in the fabrication of piping systems is now available for free distribution. Your organization or union local will find these pictures interesting and beneficial. Write for release details.

PROGRESSIVE plumbing and heating contractors are using oxy-acetylene welded piping on jobs ranging in size from modest dwellings to large apartments and office buildings. Oxwelding cuts the cost of every step in pipe installation. It simplifies design, lessens the time required to make the joint, and lowers the cost of covering the pipe. No expensive tools are needed, and heavy supports and scaffolding are eliminated.

An oxwelded joint is service-free forever; leakproof and stronger than the pipe itself.

If you want to save money and do faster work, ask the nearest Linde District Office to explain this modern method of pipe joining to you. Or write for our book, "Oxwelded Construction for Modern Piping Services."

THE LINDE AIR PRODUCTS COMPANY

Unit of Union Carbide and Carbon Corporation

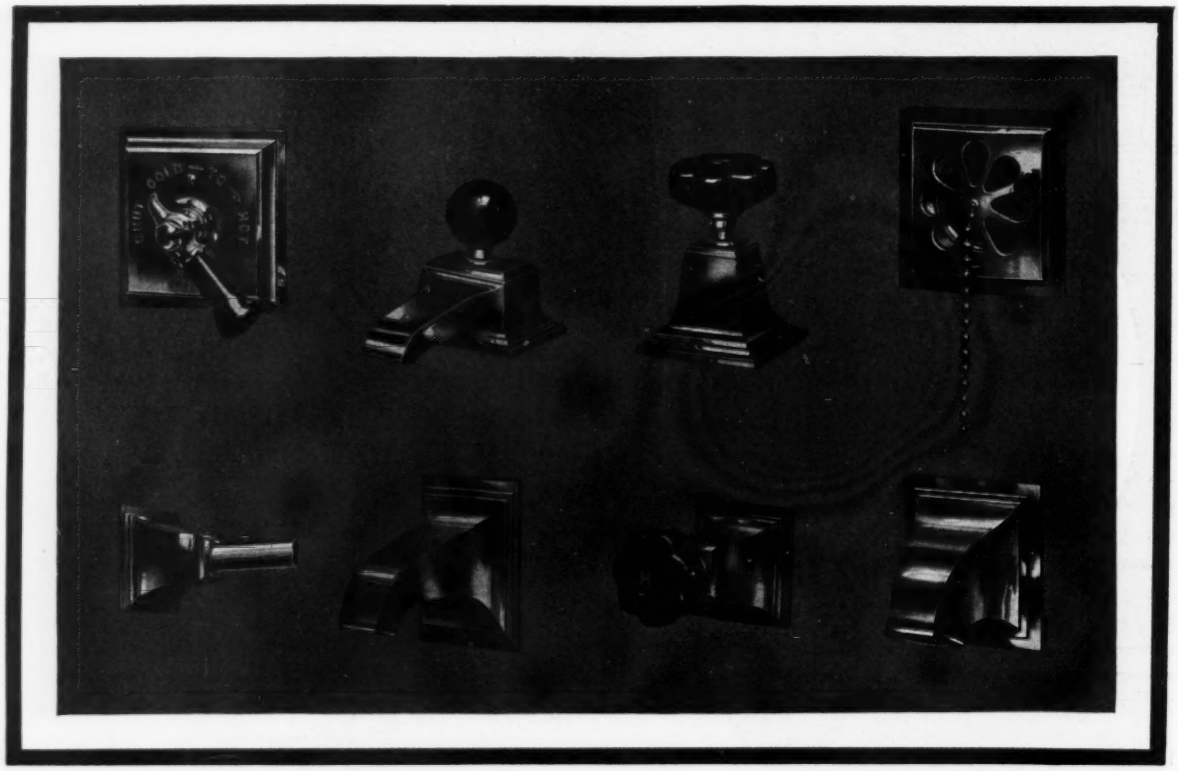
126 Producing Plants UCC 627 Warehouse Stocks

IN CANADA, DOMINION OXYGEN COMPANY, LTD., TORONTO

District Offices

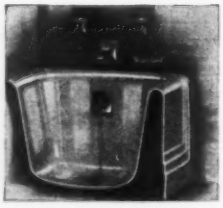
Atlanta	Detroit	New York
Baltimore	El Paso	Philadelphia
Birmingham	Houston	Pittsburgh
Boston	Indianapolis	St. Louis
Buffalo	Kansas City	Salt Lake City
Chicago	Los Angeles	San Francisco
Cleveland	Milwaukee	Seattle
Denver	Minneapolis	Tulsa

LINDE OXYGEN · PREST-O-LITE ACETYLENE · OXWELD APPARATUS AND SUPPLIES · UNION CARBIDE



"Standard" NEO-CLASSIC FITTINGS

complete the modern ensemble



● Worthy companions of the distinctive *NEO-CLASSIC* bathroom fixtures, which have been acclaimed so enthusiastically by the public, architects and trade, are the "Standard" *NEO-CLASSIC* Fittings. A creation of the same internationally known designer responsible for the *NEO-CLASSIC* idea, these fittings complete the modern bathroom ensemble.

They have been designed in harmony with the *NEO-CLASSIC* lines to bring an architectural character to the bathroom, which by its very simplicity is at once classic and modern. Because of their square bases, the *NEO-CLASSIC* fittings group neatly and smartly on the wall. This contributes vastly to the orderly effect of the *NEO-CLASSIC* ensemble.

"Standard" *NEO-CLASSIC* fixtures and fittings are displayed in all "Standard" showrooms. To appreciate their distinctive beauty they must be seen. No picture could do them full justice. Urge your customers to visit a "Standard" showroom. This will bring you greater sales and increased profits.

"Standard" PLUMBING FIXTURES

Standard Sanitary Mfg. Co.

106 Sixth Street, Pittsburgh

DIVISION OF AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

The fireman in the boiler plant was kept there all the year around on account of the electric unit and the air compressor operation, and so his labor was not considered in making calculations as to the cost of steam.

The saving in the consumption of steam was then worked out on the basis that it would be possible to use recirculation about 50 per cent of the time. This is because, during pouring and when removing castings from the sand, there is so much dust and smoke produced that it would not be possible to use recirculation during such periods; in the machine shop recirculation was already being used on one unit so 50 per cent was reasonable for the other unit in this case also. The cost of the new duct work necessary for recirculation was also carefully computed along with the cutting and other incidentals. The results showed the following:

Building	*Cost of Changes*	*Annual Saving*
Machine Shop	$2,120.00	$1,894.00
Brass Foundry	1,455.00	445.00
Iron Foundry	2,180.00	1,124.00
Total	$5,755.00	$3,463.00

This indicates that the entire cost of these alterations would be wiped out in two heating seasons, the savings effected being net and already having had a 10 per cent interest and depreciation charge deducted from the gross saving.

In the main building where soft coal was being used it was found that 1,760 tons were being burned annually and a check-up of the radiation in this building showed a total of 34,000 sq. ft. of direct radiation. Under reasonable temperature regulation the steam consumption should not exceed 500 lb. of steam per annum and possibly would be less considering Sundays and holidays when the plant does not operate. Even on the basis of 500 lb. the annual steam consumption would not exceed

34,000 sq. ft. × 500 lb., or 17,000,000 lb.

The heating plant actually was producing at even such a low rate as 7 lb. of steam per pound of coal

1,760 tons × 2,000 lb. × 7 lb. or 24,640,000 lb.

of which some 808,000 lb. were sold to a purchaser, leaving

24,640,000 lb. — 808,000 lb., or 23,832,000 lb.

used in heating. Temperature control if properly installed should at least reduce this amount by

23,832,000 lb. — 17,000,000 lb., or 6,832,000 lb.

Now what is this 6,832,000 lb. worth in dollars? The coal cost $4.49 per ton, so that the annual fuel bill was 1,760 × $4.49 and the thousands of pounds of steam produced was 24,640, making the cost per M lbs.,

1,760 × $4.49/24,640, or $0.32 plus.

There is no labor item to be considered as the fireman

(Continued on Page 134)

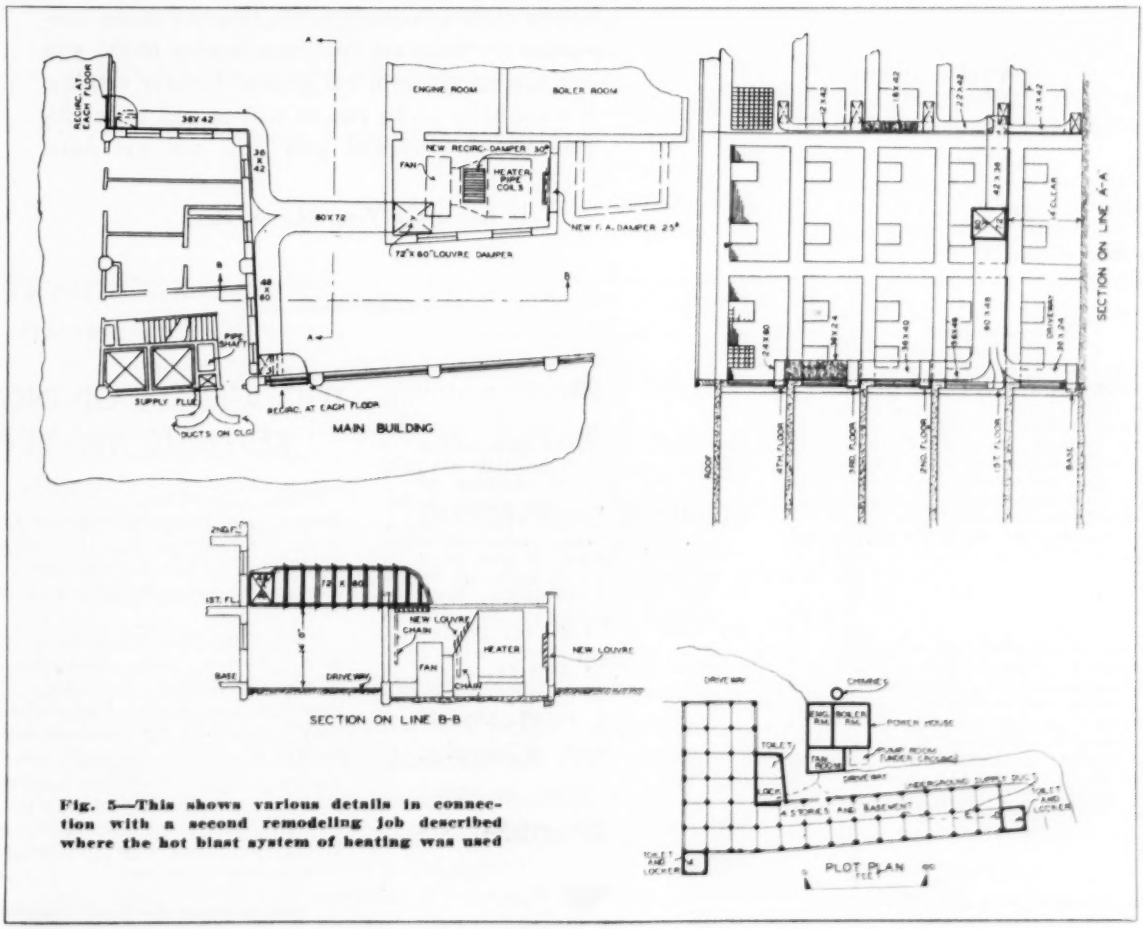


Fig. 5—This shows various details in connection with a second remodeling job described where the hot blast system of heating was used

RETAIL ADVERTISING SERVICE

HERE is another set of ads on plumbing products as Christmas gifts. A very tidy sum has been paid out of Christmas Savings Funds, and the retailer who is presenting his products in the right light is going to get his share of that money. Add prices to items mentioned.

Plumbing Gifts for Christmas — every one highly acceptable

WHILE you are making up your Christmas list, give consideration to these items. Each one is beautiful, lasting, useful, and of the greatest convenience:

AUTOMATIC WATER SOFTENER
GAS WATER HEATER
A KITCHEN SINK—IN COLOR
SWING SPOUT FAUCET
TOILET SEAT BATH ACCESSORIES
COMPLETE SHOWER BATH
COMPLETE BATH, IN FINE COLORS

These, of course, are a part only of the useful and beautiful things we have on display. Come in and see our display while doing your Christmas shopping.

(In this space, Your Name, etc.)

For one-column space

St. Nick at the Plumbing Shop

The good old gentleman with the long white whiskers is not interested merely in pretty, but useless, baubles as Christmas gifts. He has his share of gift merchandise in the plumbing store—as you will see when you visit our display. Color, beauty of line, lasting quality, thoughtfulness, convenience—these are the characteristics of the gifts you can purchase in our special holiday display. We cordially invite you to visit us and to see for yourself what unusual gifts you can get here.

(In this space Your Name, etc.)

A two-column newspaper ad

Dear Sir:

To be perfectly frank with you, I find it somewhat unusual to be suggesting plumbing gifts for Christmas.

But on thinking it over, I must admit that I can find no reason for feeling that way. Any test that may be applied to the acceptable gift is certainly applicable to the products I have in my holiday display. The thoughtful man who wishes to make his gifts this year represent full value, both in usefulness and beauty, will find much here to meet his desires.

On the ground of beauty, of color, of design, of usefulness and of lasting quality, there is nothing here that will not do more than satisfy these demands.

I'd like very much to have you visit the display. If you wish to call before coming in, I'll be glad to make it a point to be here. I know you will find many unusual gifts here, and there may be some suggestions I can make that will be helpful to you.

Just telephone me when you are coming in.

Very truly yours,
HARRY BROWN

A plumbing sales letter

The copy on these two pages is for the use of readers of DOMESTIC ENGINEERING —without charge. If you wish to use the illustrations, they are sold at $4.20 for twelve —three months' service.

If you are using any of this copy, send us samples. We like to keep in touch with what our readers are doing.

THOUGHTFUL GIVING KEYNOTE THIS YEAR

"This Christmas," says Harry Brown, local plumbing contractor, "is to be a thoughtful one. We all feel that unless we give a lot of fairly useless baubles that we haven't done right by St. Nick.

"But these times are going to teach men, women and children that thoughtful giving is better than thoughtless generosity. Usefulness and beauty should be the requirements, to my way of thinking, for every gift that is given. Christmas buying is going to play a big part in business revival, and I believe that sound buying will give holiday purchases a greater influence in bettering conditions."

Hand this publicity item to your newspaper

Automatic Heat for Christmas

Christmas gifts, certified heating and automatic heating are treated in the copy on this page. Now's the time to get after your community, before all the Christmas buying is completed.

A two-column newspaper ad

"Release That Woman!" —a Christmas Slogan

The old line from the melodramas, which used to "bring the house down," is a pretty good keynote for Christmas giving. If the head of the family can release his wife from the burden of caring for an antiquated heating plant, he may consider his gift —as she certainly will—as one of the most thoughtful and valuable he has ever made, since he put her engagement ring on her finger. We'll be glad to go into the matter fully as to cost, terms of payment, and the results in terms of economy which will make of such a gift an actual investment.

(In this space Your Name, etc.)

A Certificate of Comfort for Christmas

THE head of any family who desires to give his wife a certificate of complete heating comfort—automatic, certified heating, that will relieve her of basement duties—will find it interesting to drop in for a talk with us. He can hand his wife our certificate of installation on Christmas morning—and the work will be done promptly afterward. He will find such a certificate an investment, because it will not only contribute to comfort and convenience and health—but it will cut down his heating costs. We'll be glad to explain. Just drop in any time that's convenient.

(In this space, Your Name, etc.)

A single column ad

TAKES MELODRAMA AS THEME FOR CHRISTMAS

Harry Brown, local heating contractor, has taken a line from the old melodrama as his theme for Christmas. "'Release that woman!'" he says, "has an application these days, too, even though the lady in question may not be bound to a plank going under the old rip saw.

"Too many women are bound down to faulty heating plants. They have to dash down into the basement too often during the day to take care of a heating plant that is under- or overheating the home, causing colds, waste and discomfort. A modern heating plant, fully controlled and automatic, would release women from such tasks, and be an actual economy in promoting health and eliminating waste of fuel. I'm sure old St. Nick would approve of it."

Give this publicity item to your local newspaper

Your Window

Window displays need change. If you have a permanent display of fixtures and equipment, make changes in lighting—use the free floor space for changed displays of accessories. Property owners who pass your window will never be particularly drawn to it if it remains the same in every detail for months at a time. Change—even small changes —is what draws attention to a window.

Dear Sir:

"Release that woman!"

Do you remember, as a youngster, thrilling to that line in the old melodrama?

As I thought over my merchandising message for Christmas, it occurred to me that in many homes it has an application today. Many women need release from antiquated heating plants which lay too great a claim to their time during the day. They must control a plant that alternately overheats and underheats the house.

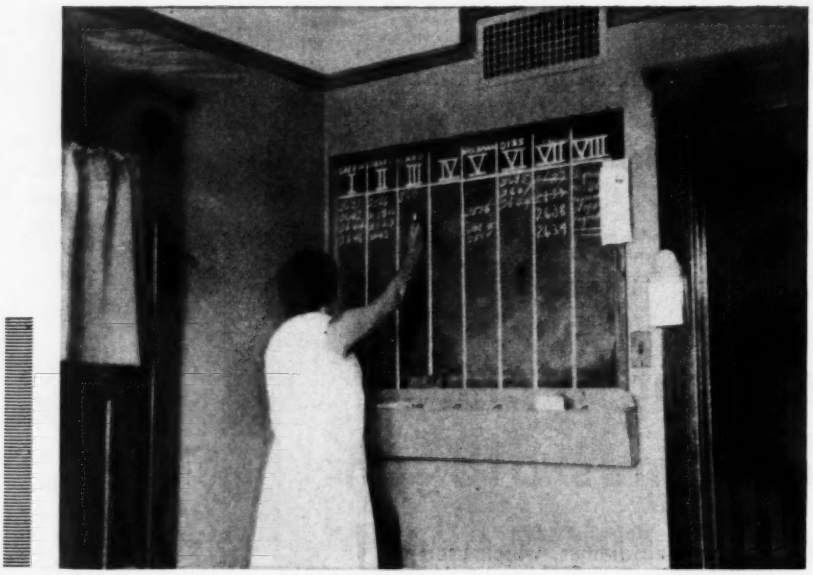
That spells waste of fuel--and it may make for unhealthy conditions, particularly where there are children.

I am suggesting to heads of families that a splendid gift for Christmas would be a certificate for the installation of a certified, automatic heating plant. And heads of families will find even more than the satisfaction of a thoughtful gift. They will find it an economy--an investment that will pay dividends by eliminating the waste of fuel in the out-dated heating plant.

Phone me, and come in for a visit.

Very truly yours,
HARRY BROWN

A heating sales letter



This is the visual control board which has been found to be a great aid to all concerned

A Control Board *that* Keeps Check *on* Journeymen

By . . . . . TOM WHITE

A SIMPLE, highly efficient system of handling jobbing work in shops employing four or more jobbing journeymen, has been worked out and adopted by E. Sugarman, 3624 Geary street, San Francisco. The system is founded on a visual control board, which has been in daily use for the past twelve months and is considered invaluable from the standpoint of both the proprietor and his journeymen; and by furnishing a day-by-day check on jobbing work in progress, the number of complaints has been materially reduced thereby adding to the number of satisfied customers. And there is nothing like having satisfied customers in jobbing work.

Mr. Sugarman employs seven journeymen who handle nothing but jobbing work, which constitutes about one-half of his yearly volume. These seven men are reported "in" and "out" with their various jobs, through the control board, and this is how it works:

The board is hung on the wall in full view of the office assistant and adjoining the entrance to the outer office. Immediately upon receipt of a telephone order the assistant makes out a numbered order blank, in duplicate. The original remains in the office; the duplicate is handed to one of the jobbing journeymen. With this assignment of work the order number is posted on the control board in the column carrying the journeyman's number and name.

Before actually assigning a journeyman to the job the assistant notes the amount of work he is already handling, and distributes the jobs accordingly. An equitable distribution of jobs works out to the advantage of everyone concerned. To the proprietor, it means that, other things being equal, all his men are comfortably busy; to the journeymen it means that all are sharing alike—that half the crew haven't a week's work staked out ahead while the other half are hanging on by the ragged edge; and to the customer it means that his work receives prompt attention, and if it doesn't he'll simply call up some other shop the next time—which means a lost customer and less work for all hands when spread over a year's time.

When the journeyman finishes his assigned job, the number is removed from his list. If at some distance from the shop and in the neighborhood of another job, he telephones in and the office assistant draws a line through the completed job number.

The order numbers are so grouped on the board as to suggest the day on which they were issued. Therefore, by looking at the posted list the assistant can tell immediately which of the orders assigned to one man represent yesterday's and today's work. Should a man carry an order around with him for more than a day, the fact is easily spotted and calls for an explanation.

At the extreme right end of the board is a blank

EXCESS WEIGHT IS USELESS--

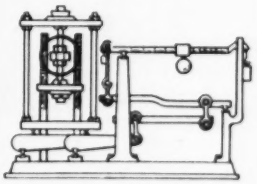
EVER hear about the fellow who wound his watch with a Stillson? Neither did we The idea is foolish.

But honestly now, is it any more foolish than the spending of good money for excess union weight? Excess weight is useless! It contributes nothing to the safety factor of your job and only adds to the expense.

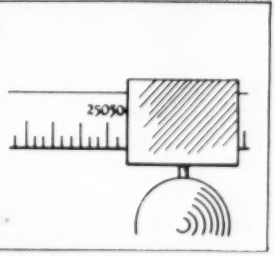
THIS Tension Test also included four other leading brands of unions. Documentary proof of these tests may be had upon written request.

MALLEABLE IRON FITTINGS CO.
BRANFORD CONN.

.....M.I.F.....
Presents
BRANFORD Sr. & Jr.
UNIONS
in
A TENSION TEST
Directed by
Prof. James Holt
Mass.Inst. Tech.



THIS VIEW SHOWS A BRANFORD UNION ON THE TENSION TESTING MACHINE.



AT 25,050 LBS. THERE WAS NO SIGN OF BREAKING

TRY ONE ON YOUR NEXT JOB

column. This space is used for general notices concerning all men in the jobbing crew.

An indirect but still an important function of the control board is that it provides at a quick glance a ready reference as to the location of each man. This is a particularly valuable feature when an emergency hurry-up job turns up and there happens to be a jobbing journeyman in that general locality.

E. SUGARMAN

3624 GEARY STREET **Phone SKyline 8845-46**

DO IT **Then Sign Your Name and Return This Slip to Me**

Date_____

To_____ **Time**_____

I DID IT

Signed_____ **Date**_____ **From**_____

Time_____

Here is a "Do It" tag which is used for handling complaints and requires no job order number

Before the control board system was adopted Mr. Sugarman tried to work out a card index plan, but for several reasons this could not be made to fit the needs. Something had to be devised that would tell the *whole* story in one hurried glance. The control board did just this.

Intimately concerned with the jobbing crew is the printed form known as the combination time and daily report card. Every Monday morning an office assistant issues six of these forms, one for each working day, to each jobbing journeyman. Each set bears the man's name, and there is a card, properly dated, for every day of the week. The men enter the order or "tag" number, address where work was performed, and the amount of time expended on each job.

On the completion of a job the journeyman turns in to the office his duplicate order form, on which is shown the time chargeable to the job. This time must check absolutely with that listed on his daily report card. This check is invaluable in that it prevents overcharging a customer through improper apportionment of time.

Mr. Sugarman and his office staff have still another form intimately concerned with the jobbing force. It is called a "DO IT" tag. This is used only for handling complaints and requires no job order number. A sheet of yellow paper two-thirds the size of a letterhead carries at the top in heavy type the words DO IT. Then follow the date, the time, and name of the man addressed. Under this is written a brief description of the job to be attended to. At the bottom, in still heavier type are the words I DID IT, followed by lines for the journeyman's signature, the date and the time. When a complaint comes in, a tag is put below the journeyman's column on the control board. The office holds the duplicate as a check.

The Sugarman establishment is located in the heart of a prosperous, thickly populated section of San Francisco and is on the principal thoroughfare leading to the beach

THE KEY TO *Your* NEW CAR

You Need a New Car?
You Want a Better Car?

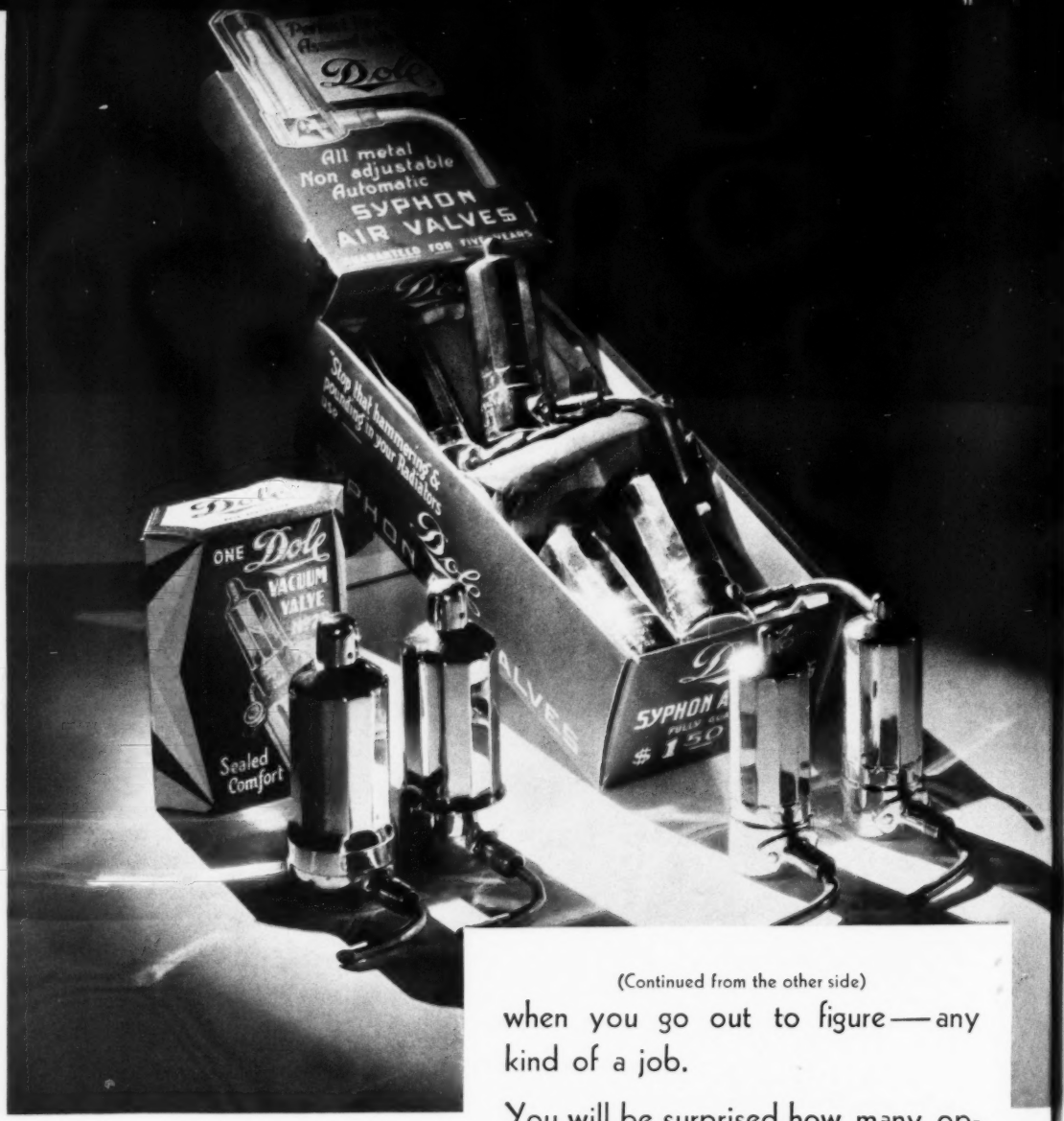
But there is the little matter of money to consider—dollars are the key to your automobile problem.

Dole Valves, installed on radiators, mean money in your pockets. Surely we may say that Dole Valves can readily be the key to your new car.

Have each journeyman carry a couple of Dole Valves in his kit. Put a sample valve in your own pocket

(Continued on next page)

DOLE



(Continued from the other side)

when you go out to figure—any kind of a job.

You will be surprised how many opportunities there are to install Dole Syphon Air Valves or to modernize one pipe steam systems with Dole Vacuum Valves No. 2-B.

And it is profitable work—it yields "gravy," that extra money that you will feel justified in putting into a new car.

Well—Buy what you wish with the funds, but remember—one of the easiest and best ways to earn yourself good profits (extra dollars) is to install Dole Valves.

DOLE

VACUUM VALVES 2-B
SYPHON AIR VALVES

DOLE

THE DOLE VALVE COMPANY

1913-1933 CARROLL AVENUE CHICAGO, ILLINOIS, U. S. A.

About Folks You Know

Supply News

What's Doing In Business

For Manufacturers, Wholesalers and Salesmen

Large Regulator Companies Unite

The Mason Regulator Co., of Boston, Mass., has acquired the Neilan Company, Ltd., of Los Angeles, Calif. In its particular field, the oil and gas industry, the Neilan Co. occupies a position equal to that of the Mason Regulator Co. in the general industrial field.

Complete engineering, manufacturing, sales and service activities will be maintained in both Boston and Los Angeles. The distribution network is, of course, considerably broadened. Mason-Neilan offices are now established at the following points: Boston, Los Angeles, New York City, Chicago, Pittsburgh and Montreal.

In addition to these main distribution points, stocks are to be carried in at least thirty-two other cities in the United States where they will be handled by the already-established Mason and Neilan distributors. World wide distribution will be maintained through the foreign connections of the Mason Regulator Co. at London, various Continental points and in Australia, New Zealand and the Far East.

◆

N. P. S. A. Sets Dates for Convention; City to Be Announced Later

The convention dates of the National Pipe and Supplies Association have been definitely set for Thursday and Friday, April 28 and 29, 1932.

The executive committee was to meet the early part of December to definitely approve the convention city. There have been considerable requests on the part of members of the association and manufacturers to meet in Pittsburgh, Pa., instead of White Sulphur Springs, West Virginia.

The committee's final decision will be announced in a later issue.

◆

B. F. Reynolds & Co. Representing Lewis Air Conditioners, Inc.

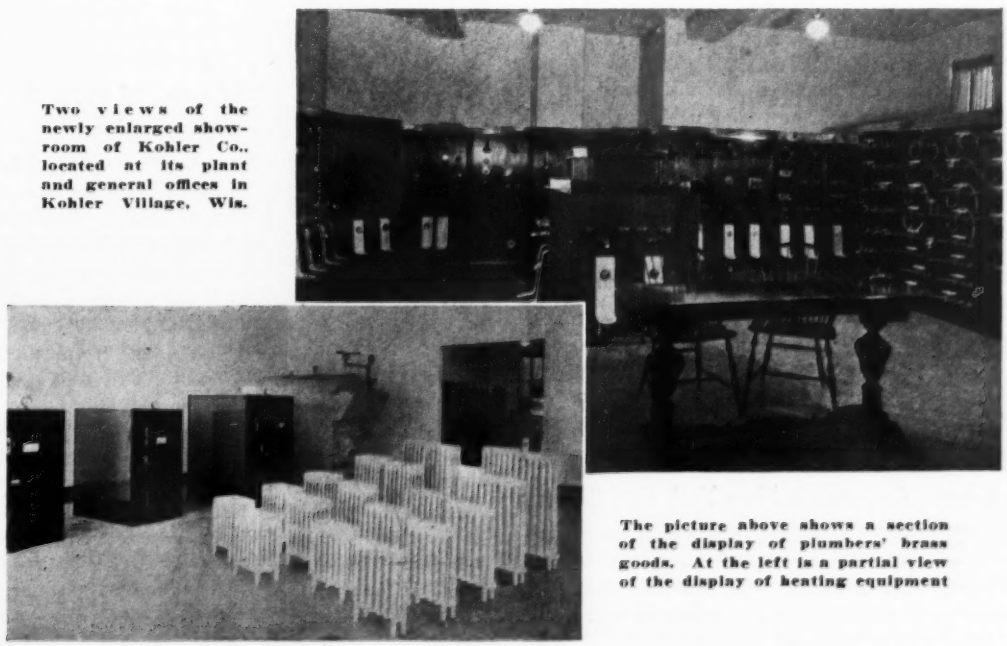
B. F. Reynolds & Co., 609 North LaSalle street, Chicago, Ill., has recently been appointed agents in the metropolitan Chicago district for Lewis Air Conditioners, Inc., Minneapolis, Minn. In this connection the Reynolds firm will handle the Lewis company's line of portable humidifiers and motorized and non-motorized air conditioners.

◆

Kohler Co. Enlarges Home Showroom to Include Heating Equipment and Brass

Boilers and radiators and a line of more than 200 different brass fittings, displayed in an original and ingenious fashion, are exhibited in the newly-added section of Kohler Company's enlarged home showroom in Kohler village, Wis., location of the factories and general office of the Kohler Co.

Approximately 1,700 sq. ft. of floor space, or one-



Two views of the newly enlarged showroom of Kohler Co., located at its plant and general offices in Kohler Village, Wis.

The picture above shows a section of the display of plumbers' brass goods. At the left is a partial view of the display of heating equipment

half more than was available originally, have been added to the showroom, which was opened in 1928. A total area of more than 5,000 sq. ft. now is devoted to the display of the company's products in Kohler village.

In the front half of the new unit are shown boilers, including a steel boiler designed for non-residential buildings, and various types of cast-iron radiation. Concealed lights illuminate the interiors of the boilers to make it easier to inspect the details of construction.

Perhaps the most novel feature of the brass exhibit is the fact that all the combination shower and bath fittings are installed on revolving panels that make possible minute inspection of concealed parts as well as exposed parts. A portion of the sink fittings—those with concealed one-piece yokes—similarly are mounted on a swinging door, giving ready access to the concealed parts.

Nine complete bathrooms, plumbing fixtures and electric plants are displayed in the two original units of the showroom, which are connected with the new unit by an attractive archway.

◆

Blake Specialty Co., Appoints New Sales Representatives

Blake Specialty Co., Rock Island, Ill., has appointed Maurice S. Spitz, 558 Little Building, Boston, Mass., as its sales representative in the New England states. Frederick J. Lockwood has been appointed by the company as its sales representative in Tennessee and Eastern Arkansas. He will make his headquarters at 709 East Fourth street, Chattanooga.

In addition, the Blake company has appointed Carl Spatz as its sales representative in the Ohio and Indiana territory, succeeding L. F. Hinson, who has resigned his position.

◆

Will Handle Retail Sales for A. F. Hinrichsen, Inc.

Mumford-Hinrichsen, Inc., has recently been organized by A. F. Hinrichsen, president of A. F. Hinrichsen, Inc., New York City, to specialize in the retail sale of portable air conditioning and regulating devices for A. F. Hinrichsen, Inc.

A. F. Hinrichsen is vice president and chairman of the board of directors and W. C. Mumford is president and general manager. Office and showroom will be maintained by Mumford-Hinrichsen, Inc., at 400 Madison avenue, New York City.

◆

Uni-Flo Grille Products Co. Moves Offices

Uni-Flo Grille Products Co., of Detroit, Mich., recently moved into new offices at 2265 West Grand avenue, in that city. In its new location the company is equipped to fully exhibit its line of products in a way that offers a proper perspective of their appearance when installed.

◆

Lincoln Electric Co. Moves New York City Offices

The Lincoln Electric Co., Cleveland, Ohio, has moved its New York office from 136 Liberty street to the new McGraw-Hill building at 330 West 42nd street. The new offices include a showroom of equipment and facilities for the demonstration of the company's line of welding equipment. G. N. Bull continues as district manager in New York.

Branch offices have also been established in Scranton and Allentown, Pa., D. Levenson being in charge of the first and F. Shackleton covering the latter territory. Both men were formerly welding technicians with the Philadelphia office of The Lincoln Electric Co.

◆

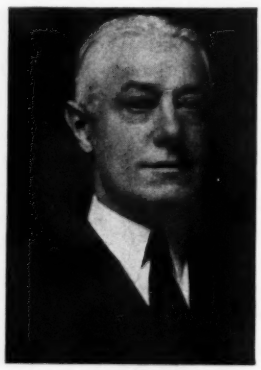
Duriron Co. Grants Manufacturing License to Canadian Firm

Shawinigan Chemical Co., Ltd., Montreal, Canada, has been licensed by the Duriron Co., Inc., Dayton, Ohio, to produce the Duriron company's equipment for all of Canada and Newfoundland. They will make a line of pumps, valves, pipe and fittings, and special castings for acid handling service. This is the first instance of a foreign company being granted a manufacturing license for the Duriron Co.

◆

Foran Boiler Co. Opens Sales Office in New York City

The Foran Boiler Company, of Flemington, N. J., has established general sales offices at 11 West 42nd street, New York City. This office will be under the personal direction of W. A. Mills, general manager and designer of the new copper and steel tube boiler of this company's manufacture. Mr. Mills has long been associated with the plumbing and heating field, having been former president of Abendroth Bros., associated with Universal Pottery Co., and more recently connected with the Bryan Boiler Co. as New York City and Westchester County representative.



W. A. Mills

◆

Cleveland Ready for Meeting of A. S. H. V. E. and Refrigerating Engineers

Plans have been made for a warm welcome to Cleveland, Ohio, January 25 to 29, 1932, when the 38th annual meeting of the American Society of Heating and Ventilating Engineers and 27th annual meeting of the American Society of Refrigerating Engineers will be held at the Hotel Statler and the Hotel Cleveland, respectively. Joint sessions for the members of the two Societies have been arranged and the members also will visit the Second International Heating and Ventilating Exposition in the Cleveland Auditorium. Chairman T. A. Weager of the Committee on Arrangements announces the completion of plans for entertaining the visitors and a record attendance is expected.

Application has been made for fare-and-one-half for Society members on the *Identification Certificate Plan* assuring them of reduced rates for their trip to the meeting.

In accordance with the usual custom no fees will be charged and attendance at the banquet and other social

functions will be optional. The banquet program will be directed by W. C. Kammerer and his committee and the special entertainment features for members and ladies comes under the jurisdiction of R. G. Davis and his associates.

The first members to reach Cleveland will be greeted by the Reception and Registration Committee, which is organized under the direction of C. F. Eveleth. For those who desire to participate in the various inspection trips, F. H. Morris and his associates are arranging transportation.

The technical program will be presented at the morning sessions and the only afternoon session scheduled is on Thursday, when the report of the Committee on Ventilation Standards will be considered.

The entire day of Monday, January 25, has been reserved for committee meetings. The first technical session will be held Tuesday morning in the Hotel Statler with President W. H. Carrier presiding and reports of the tellers-of-election, officers and council will be given. Wednesday morning the sessions will be held in the Little Theatre of the Cleveland Auditorium and it will be a joint meeting with the American Society of Refrigerating Engineers, the program being conducted under the direction of President Carrier.

Again on Thursday, the second joint session of the organizations will be held in the Little Theatre of the Cleveland Auditorium and the program sponsored by the A. S. R. E. will be presided over by Glen Muffly. The A. S. H. V. E. afternoon session on Thursday will be held in the ballroom of the Hotel Statler.

The Friday morning session, commencing at 10:00 a. m., will be held in the ballroom of the Hotel Statler and following the presentation of the technical features, the installation of officers will be made.

The technical program has been prepared with a view toward the presentation of subjects of particular interest with adequate time for the presentation of discussions. The subjects to be offered include heat transmission investigations, acoustical problems, research in pipe capacities, mechanical warm air heating and ventilating systems, combustion, field and laboratory studies of corrosion and operating data on air conditioning and cooling.

Chicago Master Plumbers Recognize Use of Price Tags as Effective Merchandising Policy

FROM a merchandising standpoint, there is no difference between selling plumbing and heating material and radios, furniture, musical instruments, automobiles, etc., because they are all purchased by the same buying public.

"Recognizing this to be true," James W. Fettes, president of the Plumbing Contractors' Association of Chicago, in a recent interview, said, "the master plumbers in the City of Chicago realized the effectiveness of affixing price tags to plumbing fixtures displayed in their show rooms, thereby removing the mystery from the plumbing business and making it possible for the buying public to become acquainted with the cost of the fixtures which will be installed for them by the responsible master plumber who sells the merchandise."

James W. Fettes

"This has been done," Mr. Fettes continued, "knowing the desire of the average consumer to compare quality and price with unlabeled and untrade-marked merchandise of inferior quality; it protects the buying public against misrepresentation and deception."

It is believed that by making available to the public recognized trade-marked fixtures properly installed at prices comparable to those quoted by retailers not qualified to install the same, the public will become the beneficiary, not only from the standpoint of economy, but also from the standpoint of correct and dependable installation.

Therefore, in conformity with the economic readjustment now in process, prices for quality merchandise will be reduced so that the consumer will be able to purchase trade-marked guaranteed fixtures at prices similar to those which are offered by plumbing and heating retailers who are not qualified to make proper installations.

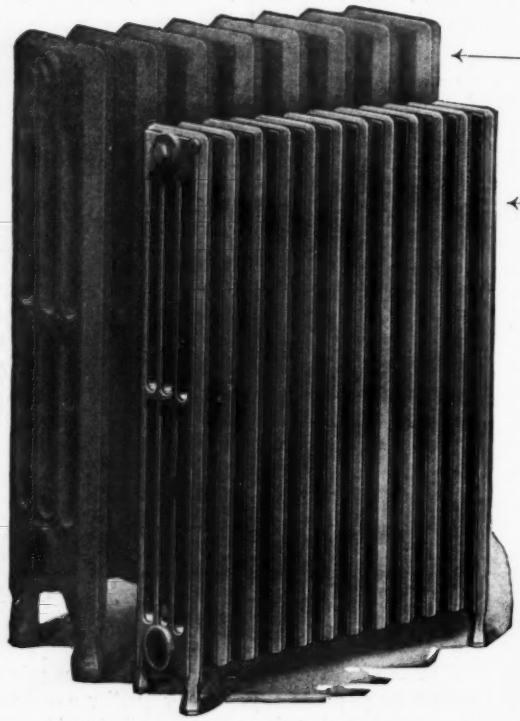
Staple lines of fixtures are now on display tagged with prices in plain figures so that the purchaser will have no difficulty in knowing what they will cost him and thereby making the obvious comparisons in his own mind.

The Chicago wholesalers who operate show rooms have likewise followed the plan of affixing price tags to the merchandise on display so that the purchaser brought to the show room by the master plumber will have no difficulty in seeing for himself just what he will pay for the fixtures.

Continuing the interview, Mr. Fettes said, "It is a matter for individual action on the part of each master plumber and wholesaler in the community. There is no element of price fixing whatever in the idea and it is fundamentally based on nothing but sound merchandising principles which have been adopted successfully in other industries."

He said, "the idea originated in Chicago where one wholesaler put it into effect and it met with such universal approval that other wholesalers and master plumbers copied the plan, thereby modernizing their sales policies to meet present day conditions."

It is understood that this plan of affixing price tags on all merchandise on display in master plumbers' and wholesalers' establishments, with a view to enabling the buying public to compare quality and price, has been endorsed by the National Association of Master Plumbers as a means of removing from the purchasers' mind much of the uncertainty that has existed about the industry.



This bulky, old-fashioned cast iron radiator is what your competitor is probably still offering to prospects.

This trim, smaller Burnham Cast Iron Radiator *equals above radiator in rating.* It will win many sales for you.

Get the Jump On Competition

with this remarkable NEW RADIATOR

YOU can get the jump on competition by offering your prospects a cast iron radiator one-third smaller, and much more attractive than the ordinary cast iron radiator.

You can do it with the new Burnham Radiator. It's just out. It is lower, narrower, and shorter than other cast iron radiators, *for the same rating.* Used either concealed or exposed, or on walls. The 3-Tube Model is only 3¼ inches deep, readily used in the average wall between studs. 4-Tube is $4\frac{7}{16}$ inches deep.

And here's how the Burnham compares with radiators of other metals: It is stronger. More attractive. *Requires no more space.* Needs no protection. Holds heat longer.

These are all practical advantages that appeal mightily to the prospective buyer. The first contractor who offers him these new small radiators is going to have a big advantage over competitors.

Let these new Burnham Radiators help you make sales. As a first step, send for full descriptions, pictures and prices to meet all competition

P. S.

We make and sell "thin" radiators of other types. That's why we're so enthusiastic about cast iron, at cast iron prices.

Burnham Boiler Corporation

IRVINGTON NEW YORK

Representatives in all principal cities of the United States and Canada

Business Personals

LAMBERT H. POLDERMAN has been promoted to the newly-created position of vice president in charge of all activities on the Pacific Coast for the Carrier Engineering Corp. of California and the Carrier Engineering Corp. of New Jersey, it has been announced. Mr. Polderman will maintain headquarters at the Carrier offices, showrooms and assembly plant, 748 East Washington street, Los Angeles, and will have charge of the Carrier offices in San Francisco and in Phoenix, Ariz. He was appointed representative for the company in the Pacific Coast territory eight years ago. In addition, he is also in charge of the activities of Carrier's affiliates, the Brunswick-Kroeschell Co. and the Carrier-York Corp.

WALTER C. MORIARTY has been promoted to the position of district manager of the Worcester and Boston, Mass., branches of Pierce, Butler & Pierce Mfg. Corp., of New York City. He will also have charge of the territory surrounding these two branches. Mr. Moriarty has been associated with the Pierce, Butler & Pierce Mfg. Corp. for twenty-four years and has acted in the capacity of manager of the corporation's Worcester branch.

C. C. STRINGER, whose likeness appears herewith, has been made vice president and general manager of the eastern division of Fiat Metal Mfg. Co., of Chicago, as announced in the last issue of DOMESTIC ENGINEERING.. Mr. Stringer was formerly president of Stringer Bros. Co., Inc., of Chicago, in which firm he is still financially interested. In the future, however, he will devote all his time to his new duties with the Fiat Metal Mfg. Co., making his headquarters at 101 Park avenue, New York City. Mr. Stringer has spent his entire business life so far in the plumbing supply line.

C. C. Stringer

J. D. MCGILL, advertising manager of Stockham Pipe & Fittings Co., Birmingham, Ala., has been placed in charge of the Southeastern territory for the company. H. B. CRANFORD has been appointed to handle the advertising work formerly performed by Mr. McGill.

GEORGE J. BLACK has been appointed general purchasing agent of Standard Sanitary Mfg. Co., Pittsburgh, Pa., succeeding the late L. C. Corbus. Mr. Black entered the employ of the Standard Sanitary Mfg. Co. on January 1, 1926, as assistant buyer for branch houses. On April 1, 1927, he was appointed buyer for branch houses, which position he held until his recent appointment as general purchasing agent for the company.

JOHN J. SUMMERSBY, JR., has been appointed assistant general sales manager in charge of resale activities for the Worthington Pump & Machinery Corp., Harrison, N. J. Mr. Summersby, formerly in charge of Holyoke

Investigate Arco Radiatherm
AUTOMATIC RADIATOR CONTROL

Build Customer Good-will
with
GOOD VALVES

You take no chances of complaints and dissatisfaction with your heating installations when you use good valves. It costs so little to use dependable AIRID AIR VALVES that it will pay you to use them on all installations.

AIRID AIR VALVES

You can insure complete venting on old or new jobs by standardizing on Airids. Airids are automatic and non-adjustable. Use No. 500 Airid for steam; No. 510 Vac-Airid for vacuum.

ARCO PACKLESS VALVES—Arco Packless Valves cannot leak. They open with one smooth turn and never stick. Require no packing and last indefinitely. Use No. 999 for steam; No. 901 for water.

IN-AIRID AIR VALVES—The invisible air valve which fits *inside* the radiator. No. 1 for steam; No. 2 for vacuum.

VENT VALVES—A complete line of popularly priced valves for venting mains and risers.

No. 815 IDEAL QUICK VENT (3/4 in.)
No. 820 IDEAL QUICK VENT (3/8 in.)
No. 821 IDEAL FLOAT QUICK VENT (3/4 in.)
No. 822 IDEAL VAC VENT (3/4 in. for Vacuum)

AMERICAN RADIATOR COMPANY
40 WEST 40TH STREET, NEW YORK
Division of AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

ARCO ACCESSORIES MAKE ANY HEATING PLANT BETTER

KENNEDY
Malleable-Iron
PIPE FITTINGS

Clean Threads
Accurate Tapping
Uniform Taper
Correct Pitch
Generous Chamfer

These Kennedy characteristics, which speed up your pipe fitting jobs and assure tight joints at the first make-up, form only a partial picture of the advantages of using Kennedy Malleable Iron Pipe Fittings. You will also be pleased with their uniformly heavy galvanizing, attractive appearance and reasonable price. Be sure to order Kennedys from your dealer for your next job.

The Kennedy Valve Mfg. Co., Elmira, N. Y.

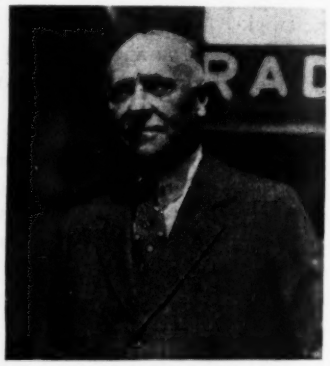
WAREHOUSES: New York, 128-132 White Street; Chicago, 1335-1337 So. Clinton Street; San Francisco, 448-450 Tenth Street.

SALES OFFICES: New York, Philadelphia, Cleveland, Chicago, Atlanta, Salt Lake City, El Paso, Los Angeles, San Francisco, Seattle.

works sales for the Worthington organization, will have under his direction as division managers, G. B. CUMMING, C. F. OECHSLE and C. A. HIRSCHBERG. THOMAS CRUTHERS continues as assistant general sales manager in charge of industrials, which position he has held since January 1, 1930.

MARTIN A. ROONEY has resigned as vice president and general manager of sales of Pierce, Butler & Pierce Mfg. Corp., New York City. Mr. Rooney's resignation was effective Saturday, November 14. The appointment of Philip J. Faherty, vice president, as director of sales for the corporation, was announced in our last issue.

L. BRUCE FULTON, formerly manager of the Chicago sales office of the Standard Sanitary Mfg. Co. of Pittsburgh, Pa., was last month elected mayor of Urbana, Ohio, and his many friends in the trade will be glad to hear that this honor has come to him. Mr. Fulton was connected with the plumbing supply trade 47 years until May, 1928, when he was pensioned by the Standard Sanitary Mfg. Co. His connection with the industry began in 1881, when he went to work for the J. L. Mott Iron Works in New York City, which concern he served in various capacities for more than a quarter of a century. In 1912 he joined the sales organization of the Standard Sanitary Mfg. Co., and a year and a half later became manager of its Chicago sales office, which position he held until his retirement from active business.



L. Bruce Fulton

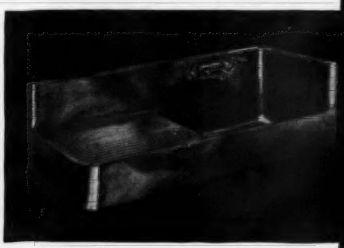
MARTIN F. PILGER, of Philadelphia, Pa., is now representing the plumbing division of the Bridgeport Brass Co., Bridgeport, Conn., in Philadelphia, Baltimore, Washington, D. C., and eastern Pennsylvania. He will make his headquarters at the company's Philadelphia office, located in the Bankers' Trust building. Mr. Pilger was formerly associated with Fords Porcelain Works and the Lambertville Pottery Co.

C. H. BROWARD of Atlanta, Ga., has been appointed sales representative in the Southern territory for the Cleveland Brass Mfg. Co., of Cleveland, Ohio. He will make his headquarters in the Healy building, Atlanta, and will cover the following states: Virginia, North Carolina, South Carolina, Alabama, Georgia, Florida, Tennessee and Mississippi.

◆

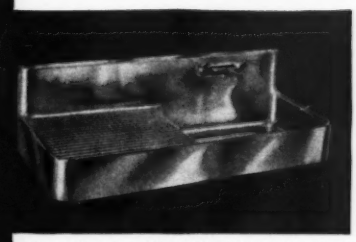
A Correction

It was erroneously stated in our issue of November 14 that O. W. Drake, formerly associated with L. O. Koven & Bro., Inc., Jersey City, N. J., and United Lead Co., New York City, had been appointed representative for the plumbing goods division of the Bridgeport Brass Co., of Bridgeport, Conn., in the New York and metropolitan territory. Mr. Drake has not been engaged by the Bridgeport Brass Co.



Monel Metal corner kitchen sink. Corner splasher at bowl end, drain board either right- or left-hand. Made in nominal sizes of 51" x 21" and 42" x 21".

Double drain board Monel Metal kitchen sink. Made in nominal sizes of 72" x 21" and 60" x 21".



Single drain board Monel Metal kitchen sink. Available in both left- and right-hand drain board models. Made in nominal sizes of 50"x21"and 41"x21".

1932 *looks bright for plumbers* who are pushing these silvery sinks

There's a "bright and prosperous New Year" ahead for plumbers who are ready to do a real, energetic selling job on the new Monel Metal Sinks!

Monel Metal Sinks represent the first really new idea in the plumbing business in years. Now plumbers have something they can "get their teeth into"—an opportunity to prove that salesmanship wins . . . in the plumbing business just as in every other. Monel Metal Sinks open the door to a great new market. They give you a chance to offer your customers a product that is vitally different and better!

Make a resolution to get behind Monel Metal Sinks in 1932. Display them prominently. Advertise them in your local paper. Circularize your trade with Monel Metal Sink literature. Talk them up to your customers. And remember . . . keep an eye on Monel Metal Sink national advertising so that you can tie up your own advertising with this huge campaign. You'll find it pays.

Let's make it a real "Happy and Prosperous New Year" with Monel Metal Sinks! Start now and write for newspaper mats and dealer helps.

Monel Metal Sinks Offer These Eight Points of Superiority

1 Rich, lustrous beauty . . . with a satiny, glass-smooth surface that is easy to clean and keep clean.

2 Neutral, silver tone that blends with any kitchen color scheme and eliminates troublesome color problems in stocking sinks.

3 Rust-proof . . . highly resistant to corrosion . . . strong as steel.

4 Solid metal clear through, with no coating to chip, crack or wear off. Less danger of damage during installation.

5 10 standardized models and 6 sizes. One-piece construction of heavy gauge Monel Metal. No joints or seams. Reinforced and sound-deadened.

6 31% more working space than an ordinary sink of same nominal size.

7 Less weight saves labor and expense . . . installing, stocking and handling.

8 Standardized construction and quantity production methods bring prices within reach of the average purse.

THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL STREET, NEW YORK, N. Y.

Monel Metal is a registered trade mark applied to a technically controlled nickel-copper alloy of high nickel content. Monel Metal is mined, smelted, refined, rolled, and marketed solely by International Nickel.

A HIGH NICKEL ALLOY
MONEL METAL
NICKEL ALLOYS LOOK BETTER LONGER

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street, New York, N. Y.

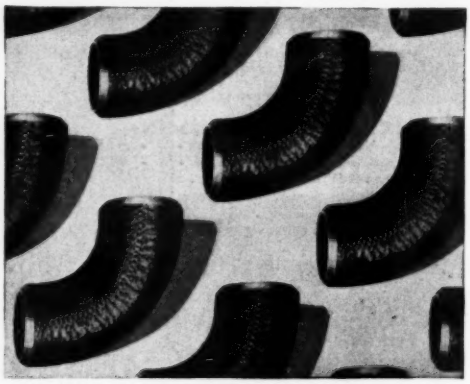
Gentlemen:—I am interested in Monel Metal Sinks. Please send me complete information on these sinks and samples of the selling helps for Plumbers.

*My Jobber is*_____
(Jobber's Address)

*My Name is*_____
(Your Address)

DE-12-31

HOLD THOSE SPECIFICATIONS!



Here's real news for Pipe Users...

SINCE welding fittings were first developed there has been a steadily increasing demand for such fittings made of genuine Reading *Puddled* Iron — the kind of wrought iron that has proved its value by generations of service.

Such welding fittings are now available—*for the first time.*

Now you can make a welded Reading Puddled Iron Pipe system of superior resistance to corrosion, at every point.

Now you can make piping systems of other metals *better* by using welding ells of this superior material at critical points.

Now you can be assured of longer life in piping systems, greater freedom from trouble *plus* the efficiency of welding fittings.

Made by MIDWEST *from Reading Puddled Iron*

These new fittings are made by the new patented process of the Midwest Piping & Supply Company, Inc., 1450 South Second Street, St. Louis Mo., from specially selected Reading *Puddled* iron skelp. You can get them in the sizes you need. They are identified by a special label and Reading knurl showing that they are made of genuine Reading *Puddled* Iron.

Ask Midwest for complete information about these fittings which give to welding ells all the time-tested resistance to fatigue, corrosion, and other pipe enemies that has always characterized genuine Reading *Puddled* Iron Pipe.

READING IRON COMPANY

General Offices: 401 N. Broad St., Philadelphia, Pa.
Mills: Reading, Pa.

Atlanta, Baltimore, Boston, Buffalo, Chicago, Cincinnati, Detroit, Houston, Kansas City, Los Angeles, New York, Pittsburgh, San Francisco, Seattle, St. Louis, Tulsa

Reading Products: Pipe Tubing Casing Sucker Rods Nipples Couplings Bar Iron Blooms Cut Nails Boiler Tubes

New York Anthracite Club Hears Address on Heat Control

The Anthracite Club of New York City held its November dinner and meeting at the Hotel McAlpin, Wednesday evening, November 18. The speaker of the evening was J. M. Reiley, president of the Penn Heat Control Co., a subsidiary of the General Electric Co. Mr. Reiley, who is an authority on the subject of heat control, presented a complete and interesting story which included the results of a comprehensive series of tests and surveys made in this field.

An excellent dinner was served, after which the regular business session was called to order. During this session plans for the second annual banquet were discussed. It was decided that the banquet will be held on January 21, in the Hotel Astor.

◆

James H. Caldwell Dies

James H. Caldwell, chairman of the board of the Ludlow Valve Mfg. Co., Troy, N. Y., died in Troy on November 18. He was in his 67th year at the time of his death. A native of Mobile, Ala., he was graduated from Rensselaer Polytechnic Institute with the class of 1886, and engaged in engineering enterprises in various sections of the country. He installed the electric lighting system for the City of New Orleans, La., before moving to Troy. Two daughters survive.

◆

Death of Edward D. Boech

Edward D. Boech, retired superintendent of the American Radiator Company's foundry in Buffalo, N. Y., died November 1, at his home in Buffalo after a prolonged sickness, in his 74th year. He was employed by the American Radiator Co. for 44 years. In 1902, he went to Schoenback, Germany, to direct the opening of a company plant there. He was past president of the Black Rock Savings and Loan Association, and was a member of North Buffalo lodge, 517, I. O. O. F. for 45 years. He is survived by three sons and two daughters.

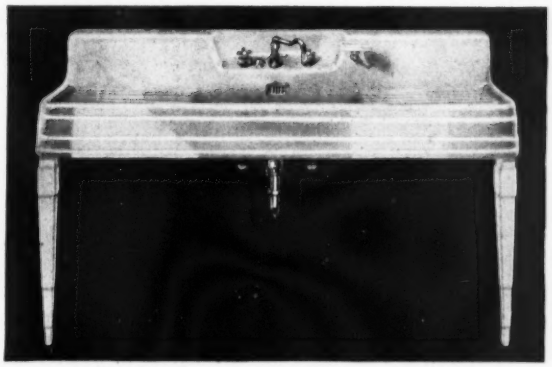
◆

Death of Thomas Spence

Thomas Spence, president of the Rundle-Spence Mfg. Co., Milwaukee, Wis., died recently at his home in that city after an illness of six weeks. He was in his 82nd year at the time of his death. Funeral services were held under Masonic auspices.

Mr. Spence was born in Milwaukee in 1849. In 1870 he founded the business which bears his name, with Joseph P. Rundle as co-partner. Mr. Spence was active head of the company until the time of his illness. Ownership of the Rundle-Spence Co. passed exclusively to the Spence family in 1900 when Mr. Rundle sold his interest. Two sons, Thomas M. Spence, vice-president, and Edmund R. Spence, secretary-treasurer, now head the firm.

Mr. Spence was a member of the Kilbourn lodge, No. 3, F. & A. M., the Wisconsin Commandery and the Tripoli Shrine. He is survived by his widow, Mrs. Mary Callaway Spence, and three sons, Edmund, Thomas and Gilbert J. Spence.



Crane Corwith *double drainboard sink, C 19168-PA*

This sink will help you sell modernizing jobs

Next year, as this year, plumbing fixtures won't be bought—they'll have to be sold. That means that while you can buy sinks lower in price than this Crane *Corwith* C 19168-PA you won't be able to sell them as easily. For you can sell this *Corwith!* Seven advantages — each of which exerts a strong appeal on modernizing prospects—combine to help you.

- *In design, it is as modern as a skyscraper*
- *The ample dimensions of its double drainboard make work easy*
- *Its fittings are on an angle recess where they are easier to avoid in dishwashing*
- *Its swinging spout pushes back*
- *Its 4" box back forms a convenient shelf*
- *Its hose and spray drop out-of-sight when not in use*
- *Its sink-well becomes a dishpan or drains at the touch of a lever*

Only with such features as these can you break down the sales resistance encountered among prospects today. If you haven't already done so, get this sink into your stock and display it. Backed by the Crane Budget Plan it will help you sell modernizing jobs.

CRANE

CRANE CO., GENERAL OFFICES: 836 S. MICHIGAN AVE., CHICAGO
NEW YORK: 23 W. 44TH STREET
Branches and Sales Offices in One Hundred and Ninety Cities

Left to right: R. P. Johnson; J. M. O'Connor; Ed. Forsblom; R. R. Hicks, N. O. Nelson Mfg. Co.; Wood T. Wright, U. S. Supply Co.; J. C. Hoehle; E. Charles; Donald Phillipp; H. English; Rex Robertson; H. Leverence; W. L. Brink, Crane Co.; C. Phillipp, Crane Co.; and J. E. Hesser, Standard Sanitary Mfg. Co. Photos taken at recent tournament of the Wichita, Kans., Trades Golf Association

Crane Will Gives Employes Share of Stock a Year

Provisions of the highly complex will of Richard T. Crane Jr., head of the Crane Co., who died in New York Nov. 7, were made public recently by Mark W. Lowell, second vice president of the Continental-Illinois Bank and Trust Co., Chicago.

The size of the Crane fortune was not revealed, and is still conjectural.

Employes of Crane Co. who had worked for ten years or more at the time of Mr. Crane's death are given one share of Crane common stock—now quoted between 17 and 18—for each year of their employment up to twenty-five years, and for each year in excess of twenty-five years, two shares.

Another provision of the will penalizes old-time employes who disposed of previous gifts of stock made to them during Mr. Crane's lifetime.

Thousands to Benefit

Mr. Lowell estimated that between 3,500 and 5,000 employes of Crane Co. will benefit through the will. The cash value of this bequest was estimated around $1,000,000. Mr. Crane during his lifetime made three gifts of stock to ten-year and over employes on the same basis as the bequest.

"If any employe has sold one of the lots of Crane company stock given to him during Mr. Crane's lifetime he shall receive only one-half of the number of shares of stock which he would otherwise have received," the penalizing provision states, "and any employe who has sold two of the lots of common stock of Crane company

BURKS SUPER-TURBINE PUMPS

WATER SYSTEMS

Judge a Pump By Its Performance

The only fair way to compare pumps is on the basis of *performance* over a period of years.

Compare the Burks Super Turbine Pump, point by point, with any other pump and be guided by relative performance!

The Burks Pump will not air-bind, hammer, or pulsate under any condition of service. Exceptional suction lift, smooth action, and capable of all the pressure ever required.

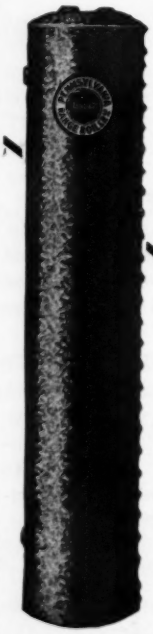
Investigate also *Burks Condensation Return Units.*

SERIES 7750 HOME WATER SYSTEM

Free Bulletins:
Water System Bulletin No. 94-C.
Condensation Return Bulletin No. 95.

DECATUR PUMP COMPANY DECATUR ILLINOIS

EXTRA VALUE Promotes EXTRA PROFITS



Especially at this time in a buyers' market the products that show their high quality by performance get the business — and your best bet is

PENNSYLVANIA RANGE BOILERS

JOBBERS: Write us for sample of any boiler for 30 day inspection.

Complete line of ALL WELDED and RIVETED AND WELDED Galvanized Boilers.

Sold Only Thru Jobbers

PENNSYLVANIA RANGE BOILER COMPANY
24th and Washington Ave. *Est. 1895* Philadelphia, Pa.

given to him during Mr. Crane's lifetime shall receive only one-fourth of the number of shares of stock which he would otherwise have received; and any employe who has sold the three lots of common stock of Crane company given to him during Mr. Crane's lifetime shall receive nothing under this bequest."

Mr. Crane named as executors of his will and trustees under it Gen. Cornelius Vanderbilt of New York City; Cornelius Crane, his son; John K. Prentice, his secretary; Walter Evensen, treasurer of Crane Co., and the Continental-Illinois Bank and Trust Company.

The will leaves to Mrs. Florence H. Crane, Mr. Crane's widow, all jewelry, personal and household effects, automobiles, etc., and the sum of $200,000, with the suggestion that it be distributed to such charities as she considers proper, expressing confidence that she would be familiar with his wishes. She also receives the use for her lifetime of his 1,500 acre estate known as Castle Hill, Ipswich, Mass.

5,000 Shares for Trust Fund

The trustees of the Crane pension fund are bequeathed 5,000 shares of the common stock of Crane Company to be used as part of the pension fund.

Each servant in Mr. Crane's personal employ at the time of his death receives a sum equal to the total amount of such servant's wages from the time of the entry into Mr. Crane's service to the date of his death.

John K. Prentice, Mr. Crane's secretary, is left $100,000.

Benjamin Stickney Cable Memorial hospital, Ipswich, Mass., receives $100,000.

A trust fund of 100,000 shares of Crane Company stock is established for the benefit of Cornelius Crane, his son. Title to the estate near Ipswich passes to Cornelius Crane, after the death of his mother, if he survives her.

Charles R. Crane II and Adolph F. Gartz Jr., nephews, are left 10,000 shares of Crane Company common stock each, and each receives one-half of the Lake Geneva (Wis.) estate known as "Jerseyhurst."

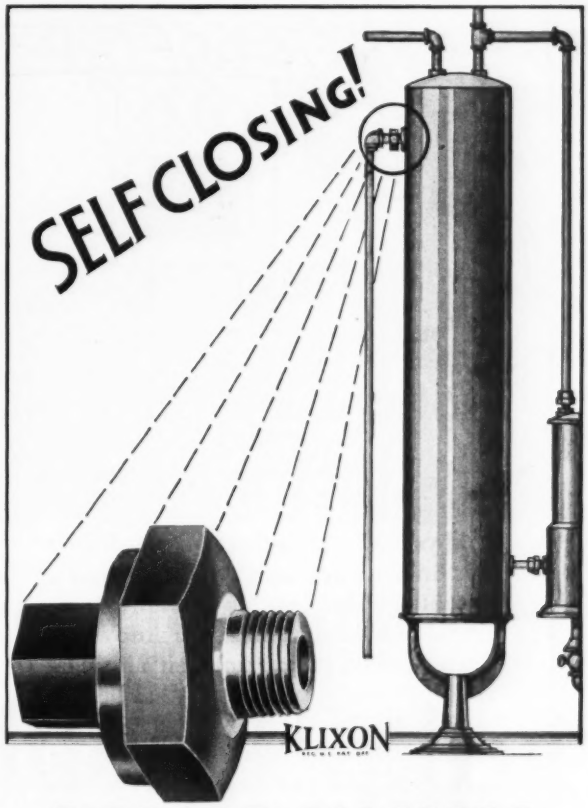
Each of the sixteen directors of Crane Company is bequeathed 1,000 shares of Crane Company common stock.

Residue in Trust to Family

The residue of the estate is left in trust: One-third for Mrs. Florence H. Crane, widow; one-third for Cornelius Crane, son, and one-third for Florence Crane, daughter.

Upon the death of Mrs. Crane her share is added to the trusts for her son and daughter.

If both Cornelius Crane and Florence Crane die leaving no descendants their trusts are added to the trust of Mrs. Crane and continued until her death, at which time one-half may be distributed proportionately among the employes then living who receive Crane Company's stock under a previous provision of the will. The other one-half may be distributed in equal shares to: The Passavant Memorial hospital, Children's Memorial hospital, Lying-In hospital, Presbyterian hospital, Home for Incurables, Visiting Nurses' Association, United Charities and Home for Destitute Crippled Children, all of Chicago.



RELIEF VALVES

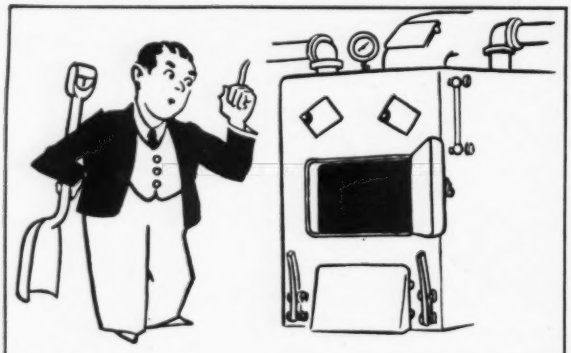
FROM your point of view, what's the use of installing anything but a SELF-CLOSING temperature relief valve—a Klixon. It's easier to sell than ordinary valves because of its self-closing feature that eliminates servicing. Sell Klixons. You'll make a real profit and avoid service calls. They're always on the job. There's always hot water in the tank. You'll satisfy your customers and reduce the cost of boiler and home protection.

Send us your jobber's name so that you can get prices and details without delay.

SPENCER THERMOSTAT CO.
ATTLEBORO, MASS.

Combined Pressure and Temperature relief valves are available, with or without the release handle. Send for catalog and price sheet.

KLIXON



"Not one shovelful till the 'doctor' comes"

And you, Mr. Steamfitter, are the doctor the homeowner calls in when there's trouble about heat. You can prescribe for a sick heater, and you know no heater can do its job unless it's insulated. That means pipes as well as boiler.

K & M "Featherweight" 85% Magnesia—"Best by Test"—has a long record of efficient service. We advocate it for a first-class heat-saving job at all pressures. We also furnish a superior Aircell Covering, in cartons, each section neat and trim.

Thirteen hundred steamfitters have asked for and received our "Extra Profit" book showing how to sell domestic insulation. If you haven't, there's a coupon below.

Keasbey & Mattison Company
Ambler, Penna.

K&M

Ambler Asbestos Products include Aircell, 85% Magnesia, Asbestos Paper, Millboard, Gaskets, Waltile.

USE THIS COUPON:

Gentlemen: 1931

Please send me the data I have checked below:

☐ "Extra Profit" Story ☐ Catalog on Packings, Gaskets and Millboard
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Name .....

Street .....

City DE-12

Fundamentals of Air Conditioning

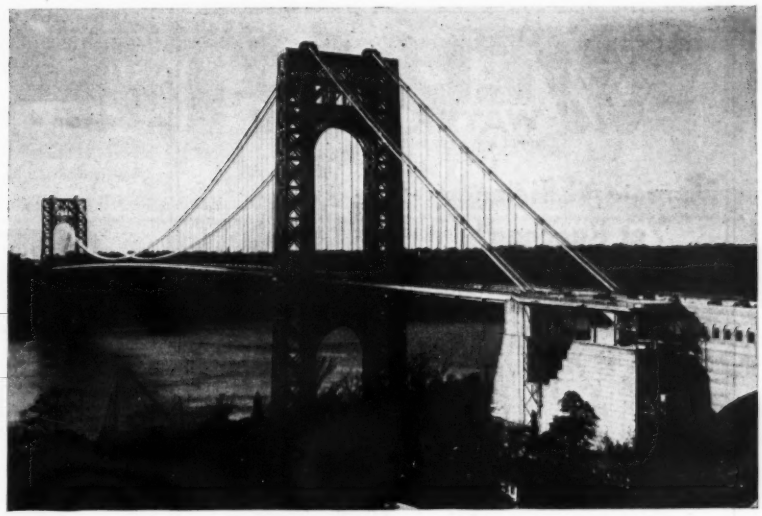
(Continued from Page 38)

requires careful thought and common sense. The independent consideration of any one of these properties will not constitute good ventilation. The proper regulation of temperature can be obtained with many different types of heating systems, although today probably one of the greatest evils of our modern heating plant is that of excessive air temperatures. Too often the heating plant is put in with the sole thought of supplying enough heat and without worrying about heat control. The importance of controlling air temperatures downward as well as upward has only recently been recognized. Methods of air cooling are now being developed and there is probably a danger that, in the enthusiasm for these new developments, air cooling devices may be promoted as a cure for all evils in our modern heating plants. Humidity is a factor which can and is being controlled. It is recognized that air of 6 to 20 per cent relative humidity is too dry for comfort and health and requires the addition of moisture to be properly conditioned. It must also be recognized that the unlimited addition of moisture may actually cause more damage than good. However, much some people would like to have the problem simplified, humidifiers alone cannot be considered as complete air conditioning plants. The word humidity during the past few years seems to have had a charm for many people in trouble, and extensive designs for so-called humidifiers have been worked out and placed on the market. Some of these humidifiers are useful only for their psychological effect. The test of the humidifier is the amount of moisture that it will supply the air.

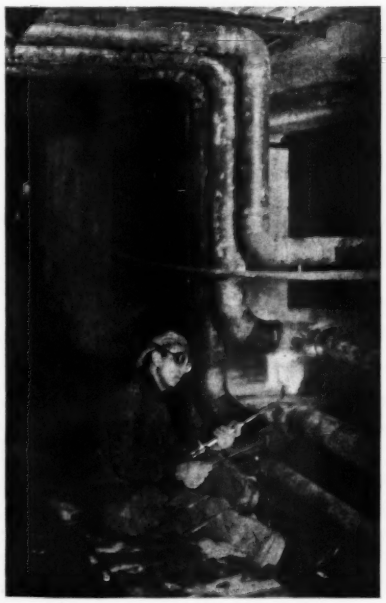
The dust problem in ventilation has been pretty well solved. Both air washers and air filters are available and are practical as a part of the air conditioning unit. Neither should be used independent of the other parts of the system and often both are advisable. The air washer may act as a humidifier; yet, if all the air is recirculated through the washer in conjunction with the heating plant, there is danger of over-humidifying. The air filter will clean the air without affecting the humidity. The air washer may also be used as a cooler in warm weather. If, however, cold water is not available, the air washer in cleaning the air will add excessive humidity which may be a detriment to the final air condition. The whole problem of air conditioning must be treated as a unit and with intelligence.

In addition to the equipment for obtaining the proper conditions, the construction of the house is a vital factor. It is well known that large amounts of heat may be lost in cold climates by direct transmission through the walls and by infiltration of air through the cracks around the windows and doors. This heat loss is an excessive drain on the heating plant and the construction of buildings in cold climates has been given careful consideration. The construction in warm climates, however, has not received the same care and, therefore, when it is attempted to apply cooling plants to these houses, the engineer should proceed with caution. Even in fairly well constructed houses he may find himself wasting from five to ten times the cooling effect as is actually required to cool the occupants of the room. Good insulation and

Both Modern



The George Washington Bridge and

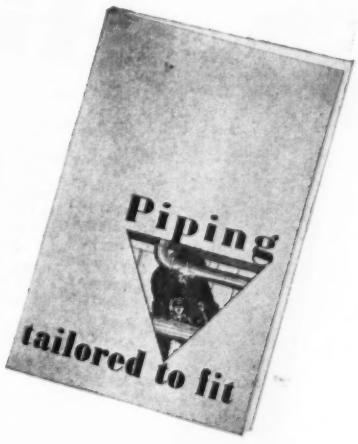


Welded Piping

The George Washington Bridge between New York and New Jersey meets today's and anticipates tomorrow's transportation demands. Oxyacetylene welding is meeting architects' and contractors' demands for more efficient, lighter and permanent piping installations.

Welded piping not only meets the present-day demands for greater flow efficiency — it meets the need for reduced installation costs and anticipates the call for the elimination of maintenance charges.

If you are planning new construction or if you are reconstructing your present buildings, let us show you why welded piping will give you a better installation in less time and at less cost.



Write to your nearest Airco office listed for a copy of "Piping tailored to fit" outlining in detail the advantages of welded piping and describing the applications of welding to piping. No obligation.

Air Reduction Sales Company

Lincoln Building, East 42nd St., N. Y.

AIRCO DAVIS

Airco Oxygen—Airco Acetylene—Airco-Davis-Bournonville Welding and Cutting Apparatus—Supplies—National Carbide

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WELDCO
WATER HEATER
TRADE MARK REG US PAT OFF

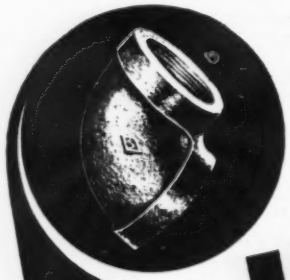
Greatest Efficiency Yet Reached!

ENTIRELY new and different design in an efficient, permanent Automatic Hot Water System. Lifetime copper heating element is submerged in vitreous enameled tank. Tests reveal an efficiency never before attained—dependable, continuous supply of clean, hot water assured for the life of the building.

NEW FOLDER FREE

Write today for illustrated literature and complete details which point the way to profits for you.

The Youngstown Welding & Engineering Co.
3600 Oakwood Ave. YOUNGSTOWN, OHIO



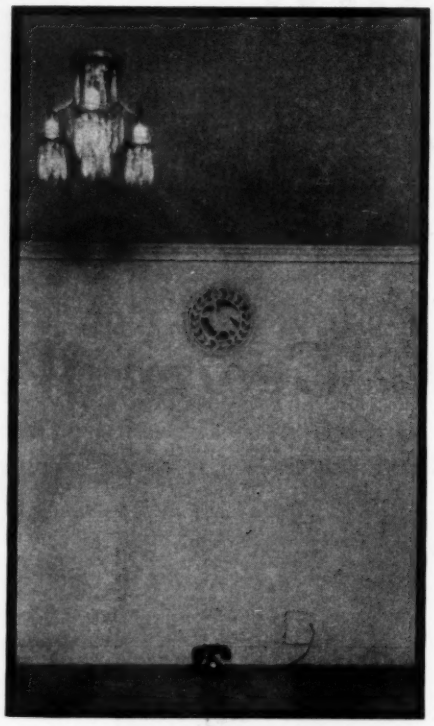
Jarecki Malleable Fittings are made of *air-furnace* malleable—free from the impurities that cupola melting cannot escape. Jarecki Cast Iron Fittings are peculiarly dense and close-grained—frequently checked and inspected.

Fittings

In these days, when every dollar must give a full account of itself, Jarecki is pleased to offer a BONUS of value in its Fittings. This BONUS is present in every Jarecki Fitting (1) because Jarecki Fittings are unusually clean, dense and free from defects and, (2) because every Fitting must pass careful inspection. EXTRA service means EXTRA value . . . more important now than ever before. Your inquiries are invited.

by Jarecki MANUFACTURING COMPANY ERIE, PA., U. S. A.

good construction cannot be overemphasized in houses which are to be cooled in warm weather. Likewise the amount of moisture which it is possible to add in the cold weather is governed not alone by that which it is desirable to have, but, also, by the amount which the air can carry without forming a condensation on the cold surfaces of the windows and the walls. If these surface temperatures are below the dew point of the air, there



One of the unique features of this air conditioning job is in the conditioned air outlets. In the case of this bedroom, the outlet is in the ornamental medallion

is sure to be condensation and trouble. Relative humidities of 50 or 60 per cent may be desirable, but, for sub-zero weather, 40 per cent is more nearly the practical limit which can be reached without trouble. This is dependent upon construction.

The construction of the building is not so vital to the elimination of dust from the air, excepting insofar as air may filter in around the cracks and carry dust with it. A tight construction is essential if the outside air contains large quantities of dust.

Air and its properties are more vital to life than food and its properties. Man can exist several days without food, but, without air, he can live only two or three minutes. The public in general is beginning to realize some of the benefits which may be derived from good air conditions. In serving the public, the engineer and manufacturer must consider the problem wisely and not try to follow through on a single track. All of the essential properties must be considered and the door must be open for any new ones which are developed. There is no reason why we cannot have comfortable and healthy air conditions in our homes as well as in schools and public places. Industries and public buildings have led ventilation in the past; the way is now open to the home.

MARKETS

BUSINESS REPORTS FROM LARGE JOBBING CENTERS

THE movement of plumbing and heating materials into consumption changed little, if any, during the past fortnight in comparison with the preceding two-week period, according to reports received from manufacturers, wholesalers and contractors in various sections of the country. Manufacturers and wholesalers state that roughing-in items, such as soil pipe, are moving at a slow pace, and, while finishing products, such as enameled ware pottery and plumbers' brass goods are in better demand in comparison, still these commodities, too, are not going at a rate considered satisfactory for this season of the year.

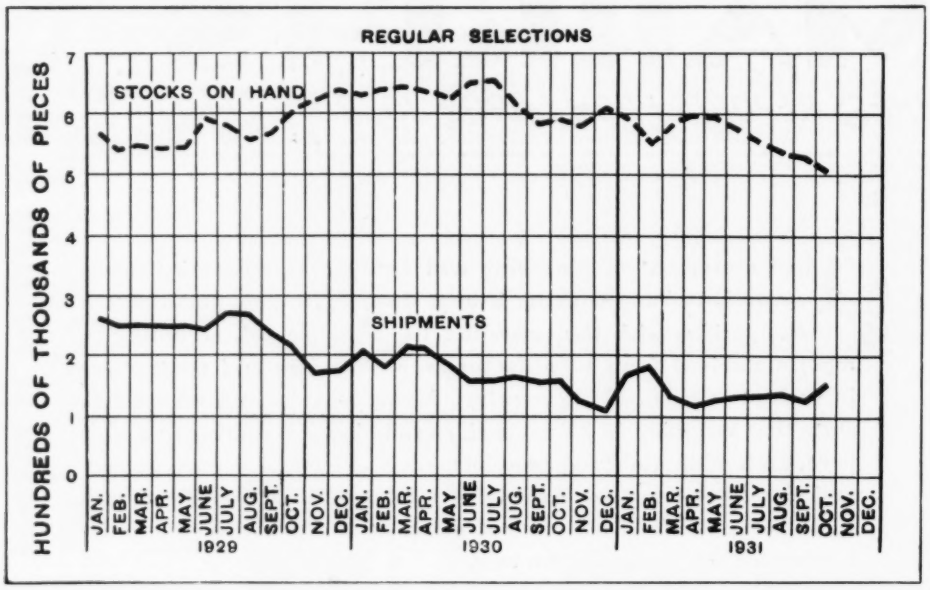
Reports indicate that wholesalers' stocks are at a low ebb, and this is reflected in the type of orders reaching manufacturers, most of them being for small quantities and marked for immediate shipment. The movement of heating materials appeared from most reports to be at a more brisk pace than that of plumbing goods, with calls for repair parts continuing quite numerous. No word has been received of changes in manufacturers' published prices to wholesalers since our last review appeared.

October shipments of enameled sanitary ware, based on reports submitted to the Bureau of the Census by 21 manufacturers who comprise practically the entire industry, were 153,597 pieces, as compared with 143,653 pieces in September, and 197,448 pieces in October, 1930. Total shipments for the first ten months of 1931 were 1,675,431 pieces, as compared with 2,130,815 pieces in the corresponding ten months of 1930.

October shipments of oil burners (United States, Canada and Foreign), based on data reported to the Bureau of the Census by 106 manufacturers, were 14,234 burners, as compared with 12,536 burners in September, and 18,580 in October, 1930. Total shipments for the first ten months of 1931 were 73,133 burners, as compared with 93,185 in the corresponding ten months of 1930, and 95,102 burners in the like period of 1929.

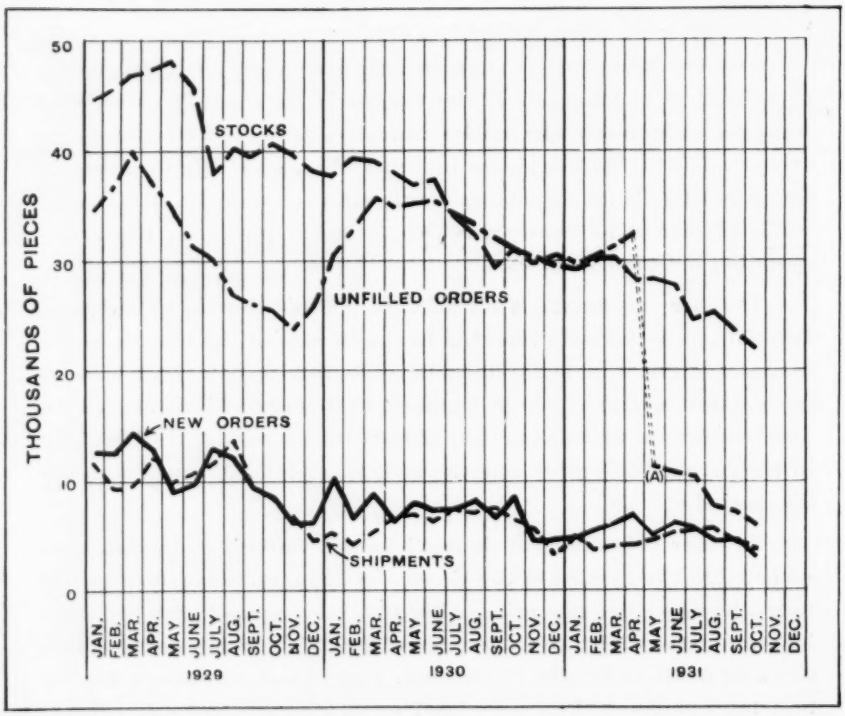
October shipments of domestic water softening apparatus, as reported to the Bureau of the Census by 24 manufacturers, were 518 units, having a net sale price of $58,688, as compared with 500 units in September, with a net sale price of $56,285, and 655 units, with a net sale price of $93,480 in October, 1930. Total shipments for the first ten months of 1931 were 5,847 units having a net sale price of $732,129, as compared with 9,508 units with a net sale price of $1,281,426 in the corresponding period of 1930.

Stocks and Shipments of Vitreous China Fixtures

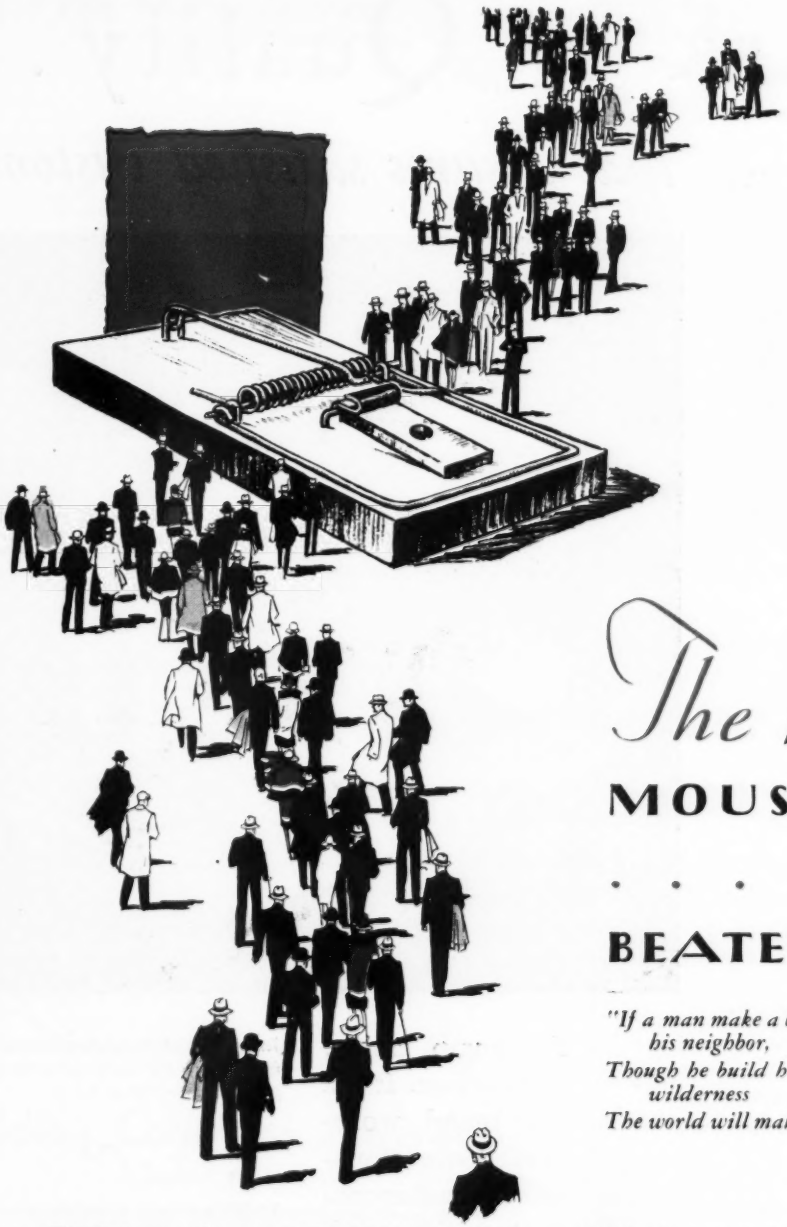


Monthly statistics on shipments and stocks on hand for vitreous china plumbing fixtures, including all vitreous chinaware which in regular practice is connected with a drainage system, are shown in the above chart. The chart is based on data reported to the Bureau of the Census by 25 manufacturers

Shipments of Solid Porcelain Fixtures



The chart above gives monthly statistics for the past three years on new, unfilled and cancelled orders for, and shipments and stocks of, solid porcelain plumbing fixtures. The chart is based on reports submitted to the Bureau of the Census by 9 manufacturers, comprising the entire industry



The better MOUSETRAP . . . . . *the* BEATEN PATH

"If a man make a better mousetrap than his neighbor,
Though he build his home in the wilderness
The world will make a path to his door."
—Emerson

LIKE Emerson's story, "SPANG" Pipe had its true beginning more than 100 years ago at the old Etna Forge, nestled in the wooded hills of Western Pennsylvania. Traditional adherence to quality production in steel pipe has been responsible for the large, modern "SPANG" Pipe mills of today and the universal recognition of "SPANG" as a standard of value among pipe users the world over.

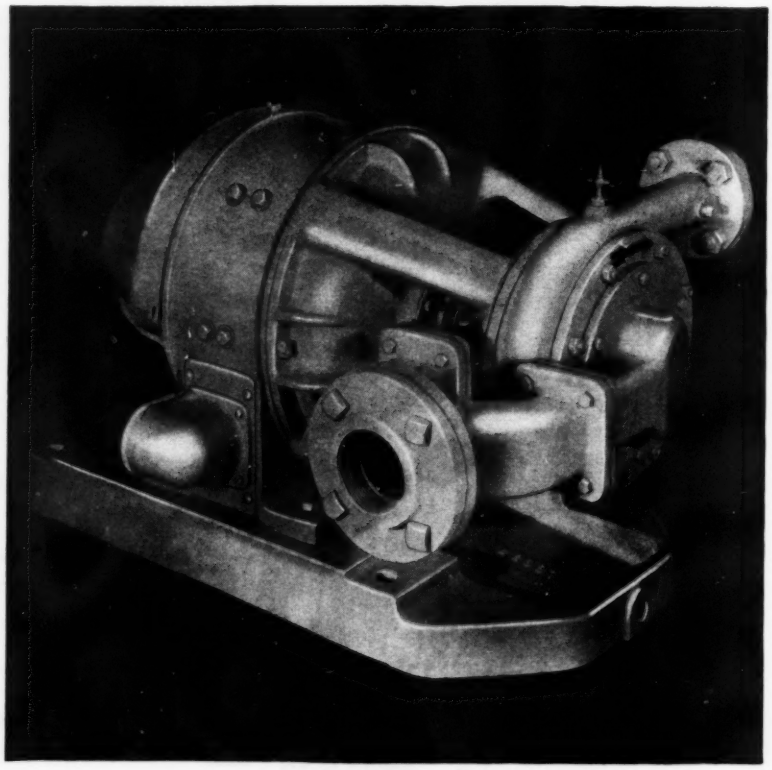
SPANG, CHALFANT & CO., INC.
GENERAL OFFICES, CLARK BUILDING
PITTSBURGH, PA.

Sales Offices: New York, Boston, Pittsburgh, Chicago, St. Louis, Tulsa, Los Angeles, Dallas, San Francisco
Welded Mills: Etna, Penna., Sharpsburg, Penna. *Seamless Mills:* Ambridge, Penna.

SPANG WELDED STEEL PIPE

A Mark *of* Quality . . .

that assures satisfied customers



IT always pays to install equipment that bears a mark of quality. First, because equipment of recognized merit creates good will for you. Second, because its good performance strengthens your reputation.

The Nash trade mark on a Jennings Centrifugal Pump is a symbol of distinction. It signifies modern flexible design that provides new ease of installation. It indicates unit construction with motor rotor and pump impeller mounted on one shaft, no flexible coupling, no bearings in the pump casing, only one stuffing box. It is a guarantee of good workmanship, excellence of materials, and strict adherence to high manufacturing standards. It is your assurance of long, trouble-free operation.

For complete information on Jennings Centrifugal Pumps, write for Bulletin 155.

Jennings Centrifugal Pumps are furnished in standard sizes with capacities up to 2000 g. p. m. Heads up to 300 ft.

VACUUM PUMPS AND COMPRESSORS FOR AIR AND GAS • • RETURN LINE AND AIR LINE VACUUM STEAM HEATING PUMPS • • CONDENSATION PUMPS • • FLAT BOX PUMPS • • CENTRIFUGAL PUMPS • • SUCTION (SELF-PRIMING) CENTRIFUGAL PUMPS • • SUMP PUMPS • • SEWAGE PUMPS • • PNEUMATIC SEWAGE EJECTORS

NASH ENGINEERING COMPANY, 41 WILSON ROAD, SO. NORWALK, CONN.

Jennings Pumps

The Metal Market

	Dec. 7	Avg. Oct., 1931	Avg. Aug., 1931	Nov. 1930
PIG IRON—				
No. 2 foundry, Chicago	$17.00	$17.20	$17.50	$17.50
PLATES AND SHEETS—				
Steel boiler plates, Pittsburgh, per lb.	1.50c	1.60c	1.60c	1.60c
Blue annealed sheets, No. 10, Pittsburgh, per lb.	1.85c	1.85c	1.85c	1.90c
*Hot rolled annealed sheets, No. 24, Pittsburgh, per lb.	2.40c	2.40c	2.40c	2.35c
Galvanized sheets, No. 24, Pittsburgh, per lb.	2.90c	2.90c	2.90c	2.95c
TIN—				
Straits tin (spot) New York	21c			
LEAD—				
E. St. Louis	3.65c			

The Old Metal Market

Dealers' Buying Prices

	Per lb.		Per lb.
Aluminum clippings	11½c	Copper, light	3¾c
Block tin pipe	15½c	Heavy crucible copper	4½c
Brass, light	2¼c	Zinc, old	1½c
Brass, heavy yellow	2¾c	Lead, heavy	2¾c
No. 1 comp. red brass	3¾c	Solder joints (close cut)	3½c
Heavy copper and wire	4¼c		

NOTE: Prices are those quoted on Monday of this week.
*Comparisons are with old classification No. 24 black sheets.

Resistance to Declines and Slight Improvements Noted in Sales and Collections Says Survey

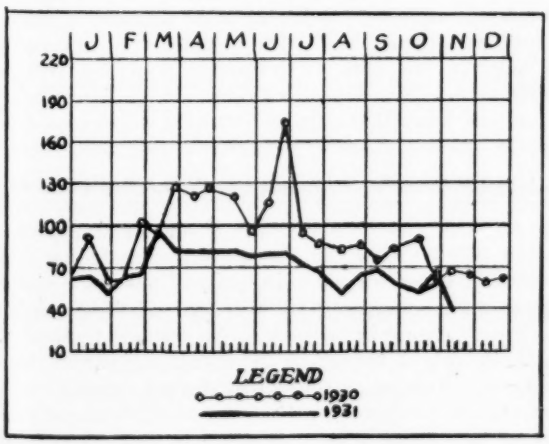
Continued resistance to further drops is evidenced in the monthly survey of sales and collections in 115 of the nation's leading trade centers, according to the November issue of Credit and Financial Management, official publication of the National Association of Credit Men.

Slight improvements in many sections of the country in both sales and collections are revealed in this month's survey which maintains the continued strengthening in the foundation for collection and sales volumes evidenced the month before.

For the third consecutive month approximately 62 per cent of the correspondents report fair sales conditions, but collections in general show a decrease of 4 per cent

Building Contracts Awarded

(Daily Average)



CADWELL
No. 10
AIR VALVES

IF you are concentrating on the building up of remodeling business, keep mindful of Cadwell Air Valve quality.

Cadwell No. 10 Non-adjustable Air Valves will practically modernize any heating system on which they are used because they give the radiator a real chance to perform efficiently.

The action of the Cadwell No. 10 Air Valve is simple yet positive. The instant steam comes in contact with the thermostatic float, it closes the valve absolutely tight and keeps it that way until the temperature is reduced. When the radiator is cold the valve remains open long enough so that all air is exhausted by the incoming steam.

Try Cadwell Air Valve Once. Order them from your regular jobber.

The BEATON & CADWELL MFG. CO.
Established 1894
NEW BRITAIN, CONN.

MORE

. . . Value for your Customer

MORE

. . . Profit for YOU

When you install an Ohio Automatic Water Heater you sell satisfaction . . . That's why our dealers are finding business easier to get. That's why Ohio Automatic Water Heaters will make you money.

Write today for our attractive proposition.

Several Attractive Models . . . $50 and up

Ample Capacities —15 to 1000 gallons

Safety Pilot Control . . . No extra charge

LOW FIRST COST

LOW OPERATING COST

We sell through the Plumbing Trade Exclusively

OHIO

Automatic

WATER HEATER

Manufactured by

THE OHIO HEATER CO., Columbus, Ohio

in the slow column and an increase of 5 per cent in the fair column. Good collections are revealed in Washington, D. C., Terre Haute, Ind., and Utica, N. Y. Utica thus leads the cities of the nation in the month's roll of honor because it is the only city, of the 115 reporting, to record good sales conditions.

Supplementary comments from the correspondents bring out the fact that New England as a section is feeling a modified upturn which in the past two weeks has also been in evidence in the middle west, which has been affected favorably by the rise in silver, wheat and oil prices.

A comprehensive survey of Illinois conditions finds an expression of fair business predicted for the balance of this year and improvement during the year to come. Other facts uncovered by this comprehensive survey are:

1. The volume of business for the first nine months of 1931 as compared with the first nine months of 1930—90 per cent replied lower, an average of 29.8 per cent, and 10 per cent replied higher, an average of 17 per cent.

2. Collections the first nine months of 1931 as compared to the first nine months of 1930—86 per cent replied lower, an average of 19.6 per cent, and 15 per cent replied higher, an average of 16.5 per cent.

3. The margin of profit on business for the first nine months of 1931 as compared with the first nine months of 1930—66 2/3 per cent replied down, an average of 25 per cent, and 33 1/3 per cent replied up, an average of 20 per cent.

4. To the question is business "up" or otherwise—66 2/3 per cent replied "no," and 33 1/3 per cent replied "yes."

5. Orders booked today compared to the same time last year—100 per cent replied "up," an average of 30 per cent.

◆

Speaks on New Natural Gas for Chicago

At the November meeting of the Illinois Chapter of the American Society of Heating and Ventilating Engineers, H. B. Johns, manager of the Heating Division of the Peoples Gas Light and Coke Co., Chicago, spoke on the subject of "Natural Gas."

As is generally known, pipe lines have been in the course of construction between the gas fields of Texas and the city of Chicago and just recently they have been completed with the result that now Chicago is being served with natural gas. The distance from the point of origin to the point of consumption of this fuel is 1,000 miles. Mr. Johns, with the aid of motion pictures, told how 100 rivers and streams were crossed as well as wild hill country, swamps and cultivated farms.

The natural gas has been mixed with the artificial gas which is being produced by the Chicago gas plants and the resultant quality is gas with a content of approximately 810 B.t.u. per cu. ft. Several outstanding reasons were given for not using natural gas alone under the new arrangement. One was that it would require too great a change in the existing gas burning equipment. As it is, only a change in the burner adjustment was required. Another reason is that the gas company does not want to scrap the great amount of artificial gas producing equipment in use. Along these lines, it reasons

If 10% would insure your job... would you Buy?

No matter how sure we may feel about our jobs, few of us would hesitate to spend 10% of our income to *insure* ourselves against job-loss.

None of us can *buy* such an insurance policy. But if we all work together, we can *make* one.

Spend 10% more!

How shall we do it? . . . Simply by spending 10% more than we've been spending—buying the things we need *now*, instead of waiting till spring.

A lot of us are afraid of the future. But the future's all right. It's the *present* we should worry about. There'll be plenty of jobs for everybody sometime—but there are too few today!

Because we're afraid, we are saving a larger share of our earnings than we ordinarily would. This kind of abnormal saving has taken millions of dollars out of circulation so they can't work. These sleeping dollars have forced our friends and neighbors out of their jobs.

By putting these sleeping dollars to work again—to buy what we need *now*—we create new jobs. And *new* jobs help create new prosperity.

In "hard" times, dollars always *buy more* and *earn less*. Our spending dollars buy about half as much *more* today than they did two years ago. But our *saved* dollars bring about a quarter *less*. Our spending dollars are worth $1.50—our saved dollars are worth about 75c.

A dollar *spent* now is worth $1.50.
A dollar *saved* now is worth 75c.

Today's prices are low—lower even than in 1921—some of them lower than in 20 years. We're surrounded by bargains—*real* bargains—fine quality at low prices.

Pretty soon—before you know it—these low prices will start *up*. Then the buying-power of our dollars will begin to *shrink*.

So, when we buy now, we are doing ourselves a double-barrelled favor: we are getting the most for our money, and we are helping to insure our jobs!

There are about 30,000,000 of us who still *have* jobs, and probably twenty million of us are spending less than we can afford with present income. Let's make our jobs secure and create jobs for those who have none—by spending our dollars normally *now*.

THE NATIONAL PUBLISHERS' ASSOCIATION

"To use available income to purchase goods normally needed and in the replacement of which labor is employed, is a condition precedent to any hopeful program to constructively increase employment."

From the Recommendations of the Committee on Unemployment Plans and Suggestions, of the President's Organization on Unemployment Relief.

that in the event of an interruption in the natural gas service, the artificial gas supply still would be available.

Mr. Johns stated that the gas company is not proceeding on the assumption that they have a corner on the fuel market in Chicago. However, he pointed out that they have some 900,000 customers using gas for cooking and other purposes at the present time. It is estimated that the gas company field includes 45,000 homes which may be considered as gas heating prospects for a period covering the next five years. This uses the basic figure of 270,000 buildings. Assuming that one-third of these are logical gas prospects, the figure reduces to 90,000. Then, one-half, or 45,000, are taken as comprising the field for the next five years.

◆

St. Louis Chapter Hears Talk on Refrigeration

The November dinner meeting of the St. Louis, Mo., Chapter, A. S. H. V. E., was held at the Roosevelt hotel, on the 18th. After dinner, the meeting was called to order by President Robert Rosebrough.

A nominating committee, consisting of five members, was appointed to select candidates for offices of the chapter for the year 1932. President Rosebrough appointed L. Walter Moon and George Myers. A motion was made by Paul Sodeman and duly passed that the chapter appoint William Oonk, Jack Cooper and Oscar Wolff.

After the business meeting Mr. Moon, chairman of the entertainment committee, introduced E. F. Edwards and L. J. DuBois, both of the York Ice Machinery Corp. Mr. Edwards discussed the application of refrigeration as applied to air conditioning and comfort cooling. Mr. Edwards stressed the tremendons possibilities of comfort cooling in the homes.

Convention Dates

January 12, 13 and 14, 1932—WISCONSIN—The annual convention of the Wisconsin Master Plumbers' Association, to be held at Milwaukee.

January 25-29, 1932—A. S. H. V. E.—The annual meeting of the American Society of Heating and Ventilating Engineers to be held at Cleveland, Ohio, with headquarters at the Hotel Statler. Also the Second International Heating and Ventilating Exposition, at the Cleveland Auditorium.

February 2, 3 and 4, 1932—OHIO—The annual convention of the Ohio Master Plumbers Association, to be held at Cincinnati, with headquarters at the Netherland Plaza Hotel.

March 14, 15 and 16, 1932—INDIANA—The annual convention of the Indiana Association of Master Plumbers, to be held at Muncie.

April 11-16, 1932—A. O. B. A.—The ninth annual convention and show of the American Oil Burner Association, to be held in Mechanics' building, Boston, Mass. Convention headquarters at the Statler hotel.

April 28-29, 1932—N. P. S. A.—The annual convention of the National Pipe and Supplies Association, to be held at the Greenbrier Hotel and Cottages, White Sulphur Springs, W. Va.

June 21, 22 and 23, 1932—N. A. M. P.—The 50th annual convention of the National Association of Master Plumbers, to be held in New York City, with headquarters at the Hotel Pennsylvania.

COMING TRADE EVENTS

June 20, 21, 22 and 23, 1932—Exposition of plumbing, heating and allied products, in connection with the 50th annual convention of the National Association of Master Plumbers in Madison Square Garden, New York City.

Packard Laboratory, of Lehigh University, Bethlehem, Pa.
Architects: Visscher & Burley New York
Engineer: C. A. Fuller, New York
Contractors: Riggs, Distler & Co. Baltimore, Md.

See our exhibit at Booth No. 150 at the International Heating and Ventilating Exposition, Cleveland, O., Jan. 25th to 29th inclusive.

LEHIGH SELECTS
SARCO
for the "Last Word in College Laboratories"

The magnificent James Ward Packard Laboratory of Engineering, recently dedicated at Lehigh University, has been aptly described as the "last word in college laboratories."

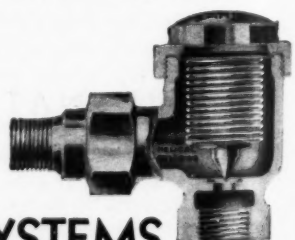
It was only natural that, in selecting the equipment for this model institution, those who designed it and those who will work in it should insist upon proven superiority in performance for every piece of equipment.

It was logical also that, in selecting the heating system, these men should turn to Sarco. Our factory is near the University and for years we have enjoyed the cooperation of the faculty. Our product has frequently been tested there—they just knew they could depend on Sarco.

You, too, will have no hesitation in specifying Sarco Radiator Traps, Inlet Valves and accessories when you know us better. Our new catalog No. M-40 will get us acquainted. May we send it?

SARCO HEATING SYSTEMS BUILT TO A QUALITY STANDARD

SARCO COMPANY, INC.
183 Madison Avenue New York, N. Y.
Branches in Principal Cities
Sarco Canada Limited, Federal Bldg., Toronto, Ont.



SARCO HEATING SYSTEMS

Bill Filed to Stop Retail Sales by Massachusetts Utilities

A bill has been filed with the house clerk of the General Assembly of Massachusetts aimed to prevent retail merchandising on the part of gas and electric power utility companies. The petition reads as follows:

"No corporation, company, association, joint stock company or association, firm, partnership or individual, their lessees, trustees or receivers, owning, operating, controlling or managing, directly or indirectly, any plant equipment or property used in connection with the manufacture of gas or electricity, or electricity or gas after July 1, 1932, shall engage directly or indirectly in the business of purchasing for resale and selling at retail any gas or electrical appliances, equipment, fixtures, or other wares and merchandise, nor shall such public utilities carry on business of selling at retail through any subsidiary which it owns or controls, any products manufactured, produced or purchased by it or any of its subsidiaries.

"Any public utility violating the provisions of this act shall be subject to a fine of not less than $5,000 nor more than $10,000 and each day the violation continues shall be deemed a separate offense. All acts and parts of acts in conflict herewith are hereby repealed."

◆

Speaks on Individual Partnerships and Corporations in Plumbing Industry

At a meeting of the Wisconsin Valley Sanitary Club, held at the Witter hotel, Wisconsin Rapids, Wis., on November 21, Carl Marsh, counsel for the Wisconsin Master Plumbers' Association, discussed the relative advantages and disadvantages of individual partnerships and corporations in the plumbing contracting business, analyzing the two relative to taxes, overhead and legal responsibilities of those financially interested.

Following the afternoon session and evening dinner, members of the Sanitary Club adjourned to the local high school for a joint meeting with representatives of the Journeymen's Unions, Vocational Schools, Industrial Commission and the State Board of Vocational Education.

At this meeting plans were formulated for the employment of an itinerant plumbing instructor for cities in the Wisconsin River Valley, which includes Wausau, Merrill, Stevens Point, Antigo, Waupaca, Marshfield, Rhinelander, Wisconsin Rapids and Tomahawk, Wis.

Consider Establishment of Training Center for Building Trades

The proposed establishment of a building trades training center through the board of education was discussed at a luncheon meeting of the New York Building Congress on November 20, at the Hotel Commodore, New York City. Dr. William E. Grady, associate superintendent of the board of education, and Dr. Franklin J. Keller, director, vocational survey commission, were the principal speakers. School authorities in recent years have given much consideration to the problem of putting vocational training on a modern basis.

◆

New Ruling Requires Indenturing of Apprentices in Wisconsin

Plumbing has been declared an industry in Wisconsin by the Wisconsin Industrial Commission and this fact makes it necessary for all minors employed in the industry to be indentured as apprentices.

The order becomes effective January 1, 1932, in any city or village having a system of waterworks or sewerage, or in any metropolitan sewerage district.

By requiring a five-year apprenticeship preliminary to application for a plumber's license, the legislature indicated it considered plumbing a trade industry and the fact that 81 per cent of the learners are indentured as apprentices shows that the trade so regards itself, the commission stated.

◆

Montreal Masters Hold Annual Banquet

Alderman Max Seigler told members of the Master Plumbers' Association of Montreal, Quebec, Can., at their annual banquet, held recently in the Queens hotel, that they were responsible in large measure for the health of the people and the cleanliness of the city.

Alderman Seigler made this remark in the course of replying to the toast of the city of Montreal, which was proposed by C. Poirier, past president of the Master Plumbers' Association. Joseph Francoeur, a member of the Quebec provincial legislature, proposed the Provincial Technical School, and A. Belanger, superintendent of technical schools in Montreal, responded. He sought the continued support of the Master Plumbers Association. W. Cambridge gave the toast of the plumbing department of the city, the reply coming from A. Cousineau, superintendent of the city sanitary department. James B. Staton proposed the toast to the guests,

and E. K. Broseau, representing the Master Plumbers Association of Quebec City, and Chief Raoul Gauthier, of the Montreal Fire Department, replied.

Officers of the association responsible for the arrangements for the banquet were M. J. Quigley, president; A. Lalande, first vice president; W. Cambridge, second vice president; James B. Staton, honorary secretary; H. M. Clarke, chairman of the committee; and G. Poirier, James Griffin, W. Bethune, John Watson, John Russell, A. Cooper and C. Clark.

◆

Greater New York Association Asks Manufacturers to Exhibit at N. A. M. P. Convention

The Greater New York Association of Master Plumbers, at a meeting on November 16, unanimously adopted a resolution giving its approval to the forthcoming convention of the National Association of Master Plumbers, which is to be held in New York City in June. The resolution requested that every manufacturer of plumbing and heating materials, tools and equipment exhibit his products at the fiftieth annual convention.

◆

Northern Colorado Masters Meet

The Northern Colorado Master Plumbers Association recently held a regular meeting at the Lanyon Brothers Plumbing and Heating Company shop, in Ft. Collins. The attendance at this meeting was the best that has been had for some time.

◆

Plan Elaborate Decorations for N. A. M. P. Convention

Gold and blue, special colors commemorating the National Association of Master Plumbers' fiftieth year, will predominate in the decoration of Madison Square Garden's exhibit hall and arena for the golden anniversary home-coming convention of the association, to be held in New York City, June 20 to 23, 1932. This was announced by M. J. Kennedy, president of the Greater New York Association of Master Plumbers, and chairman of the National convention and Exhibit committee, after completion of booth construction and arena decoration plans.

The principal feature of the decoration of the exhibit hall will be an especially decorated concourse running the length of the hall. This concourse is to be given special decorative treatment. At the lower end of the concourse the committee plans to create a "Hall of Fame" where, grouped around special portraits of the first and present presidents of the National Association of Master Plumbers, portraits of all the national presidents of the past fifty years will be hung.

◆

Tri-City Development League Holds Dinner Meeting

A joint dinner meeting of the Tri-City Plumbing and Heating Trade Development League and the Quad City Builders' Club was held on November 18, at the Blackhawk hotel, Davenport, Ia. Ninety members of the two organizations were in attendance.

After the dinner, Louis Plambeck, president of the Tri-City Plumbing and Heating Trade Development League, introduced Philip E. Palmgren, president of the Quad City Builders' Club. The speaker of the evening, Sidney Storey, of the Americanization Department of the Veterans of Foreign Wars, spoke on "The Enemy Within Our Gates."

Several acts of vaudeville were presented to add to the enjoyment of the meeting.

◆

Milwaukee Masters Take Part in City-Wide Merchandising Plan

Merchant plumbers belonging to the Milwaukee Master Plumbers' Association took part in a city-wide merchandising effort on December 3, known as "Milwaukee Day." Special window displays were arranged to conform to the plans as outlined by a special committee in charge of the event, and special mark-downs were provided on fixtures and merchandise for the one-day event. It is estimated that 100,000 people shopped in the city and neighborhood sections during the day.

◆

Alabama's New License Law Begins to Function

The Board of Plumbers Examination & Registration of Alabama, created by an act of the last legislature, has begun to function actively with headquarters located at 2213 Twelfth avenue N., Birmingham. J. M. Boggan,

M. J. Kennedy (left), chairman of the National Convention and Exhibit Committee, receives the congratulations of William F. Carey, president of the Madison Square Garden Corp. Mr. Kennedy had just completed final contracts for use of the Garden as meeting place for the golden anniversary home-coming convention of the National Association of Master Plumbers, to be held in New York City, June 20 to 23, 1932

secretary of the Birmingham Association of Master Plumbers, has been named executive secretary.

Certificates of registration are now being issued to journeymen and master plumbers on payment of the required fees and presentation of evidence of qualification. Secretary Boggan has sent out notices to real estate dealers and other larger property managers advising them of the new law and asking them to cooperate by requiring plumbers to show their certificates. Certificates being issued are good until January 1, 1933.

Members of the state board are R. E. Lutz, Mobile, president; J. F. Hickman, secretary-treasurer; G. H. Hazlehurst, Montgomery, representing the state board of health; H. A. Stevens, Mobile, and E. A. Boie, Birmingham. At a meeting October 7 rules were adopted for guidance in administration of the law.

It was deemed desirable that an applicant for a journeyman's license should show at least three years' experience as a helper or apprentice to constitute a reasonable time in the business. A master plumber must be 21 years old and preferably have at least one year's experience as a journeyman.

Any master or journeyman plumber convicted three times or more for violation of any city plumbing rule or regulation or state, city or county health law will be deemed incompetent by the Board of Master Plumbers' Examination, and will be subject to revocation of license at the discretion of the board.

S. E. Scholze of Birmingham, president of the Alabama Association of Master Plumbers, and an ardent supporter of the new law, is of the opinion that it will place the plumbing business on a much higher level in Alabama. It is pointed out that established plumbers who have been in business for many years, pay licenses and are well qualified should no longer be subjected to unfair competition from incompetent persons, with the new law in effect.

The new law now applies only to Alabama's two largest cities, Birmingham and Mobile. The other towns and cities of the state were not deemed quite ready for the rather strict supervision which the new law imposes. But members of the board hope to bring about such model conditions in the two cities mentioned that the same regulation will be gradually extended to the whole state.

$900,000 in Gas Appliances Sold by Master Plumbers

THE past results and future plans of dealer co-operation were the keynotes of a dinner tendered approximately two hundred plumbing and heating contractors of Brooklyn and Queens, N. Y., December 3rd, by the Brooklyn Union Gas Co.

James F. Howley, manager of the Dealer's Service Division of the Brooklyn Union Gas Co., acted as toastmaster and opened the activities with a brief resume of the accomplishments brought about by the co-ordination of sales effort on the part of the dealers and gas company. He introduced as the first speaker of the evening Hugh Cuthrell, manager of the new business department. Several distinguished guests were present, among whom were M. J. Kennedy, President of the Greater New York Association; Wm. Wolff, President of the New York State Master Plumbers Association; J. Zimmerman, President of the Queens Master Plumbers Association; M. H. Kahme, President of the Standard Williamsburgh and Greater Cities Association, and R. J. Atkinson, past-president of the Hardware Merchants Association.

Sketching the accomplishments of the plan since its inception in 1929, Mr. Cuthrell forcibly went on record as saying that his company felt that credit for its success was due entirely to the dealer. He pointed out that since the plan went into effect dealers had sold $900,000 worth of gas appliances. Of this amount $600,000 had been sold by the dealers without any direct help whatsoever. The remaining $300,000 had been sold by the gas company on leads furnished by the dealer. Because of this tremendous activity on the part of dealers the gas company showed an increase in the sale of gas appliances both wholesale and retail of 34 per cent over last year and hoped for a proportionate increase next year. Urging the plumber dealer to have more confidence in himself, Mr. Cuthrell pledged every possible support for the increase of gas appliance business for the coming year.

"The results of our recent refrigerator campaign," he said, "have been gratifying even though we feel that more can be done in the future. The refrigerator drive produced approximately $70,000 in new business. In the future we hope this will be increased a great deal. Brooklyn is the outstanding market for gas refrigerators in the country. Some idea of its magnitude can be realized when it is compared with Chicago, for instance where, although there are about one million gas meters installed, there are only about four thousand gas operated refrigerators. Brooklyn at the present time has some 26,000 gas boxes and in spite of the fact that there are over a dozen automatic refrigerators of other types sold here, this number represents 45 per cent of the entire amount of all kinds sold. Nowhere else in the entire country is such a condition existing and it only proves further the great potentialities in this field."

In closing his remarks Mr. Cuthrell stated that 1932 would see a concerted effort on the part of the gas company to push the sale of automatic storage water heaters. In discussing the possibilities of this market in Brooklyn he pointed out that although there are some 359,000 one and two family homes in this district, there are only 29,000 automatic storage water heaters.

Gas Company Wants to Drop Wholesaling

The subject of water heaters brought into the talk the wholesaling of these appliances and Mr. Cuthrell stated emphatically that his company had no wish to be engaged in wholesaling but felt that this activity was vitally necessary under present conditions. He announced hope of a meeting in the very near future with the jobbing interests to discuss the matter in detail. "Until then," he said, "we will continue our present policy but wish to assure every dealer present that we will co-operate on any A. G. A. approved appliance whether or not it is purchased from us."

The next speaker of the evening, J. Zimmerman,

TRENTON
BRASS·PRODUCTS

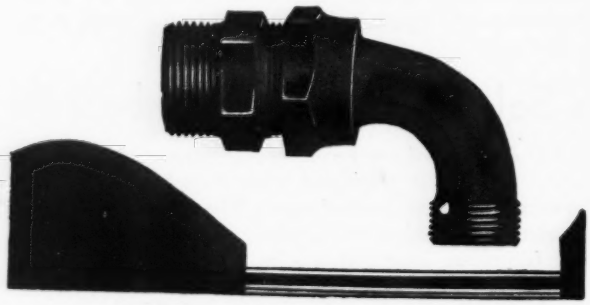
LOOK FOR OUR CATALOG IN PLUMBING & HEATING CATALOG

Trenton Brass Boiler Couplings are the kind of Plumbers' Brass Specialties that are really profitable to handle.

You install them and your profit is made. They will not cost you anything because of service calls.

Your customer will forget them until he is ready to call a plumber,—then he will remember you.

The Trenton Brass & Machine Co.
Trenton - - - New Jersey
Represented by
ROLLIN C. WILSON
7 E. 42nd St., New York, N.Y.
261 Franklin St., Boston, Mass.



ARMSTRONG BROS.

for faster, cleaner pipe cutting . . . and easier too

This is not an idle claim for it is based on fact—there are sound reasons why ARMSTRONG BROS. Pipe Cutters and Cutter Wheels cut faster, easier and cleaner. All ARMSTRONG BROS. Pipe Cutters ("Saunders" Type, "Barnes" Type, and the Heavy Duty) have pins and rollers of hardened tool steel, are accurately machined and fitted, will not wear "wobbly," will always "track".

ARMSTRONG BROS. Knife Blade Cutter Wheels have thin, penetrating blades that *cut* rather than wedge pipe apart. They are made of selected Alloy Tool Steel, are accurately machined, heat treated, oil tempered and cadmium plated. They take a keener edge and hold it. Smooth or knurled edges; in sizes for all standard make pipe cutters.

Write for Catalog P-10 which describes the complete line of "Better Pipe Tools" that are distinguished by the Arm-and-Hammer Trade Mark.

ARMSTRONG BROS. TOOL CO.
"The Tool Holder People"
323 N. Francisco Ave., Chicago, U. S. A.

London Branch
ARMSTRONG BROS. TOOL CO., LTD.
35 Upper Thames St., London,
E. C. 4, England

pointed out that the co-operation of the Queens Association members had been one hundred per cent in the past and would be unchanged in the future. Morris H. Kahme, speaking for Williamsburgh, urged even greater effort and co-operation in the future.

M. J. Kennedy injected pleasing humor into the evening by pointing out the differences in attitudes of years ago when he was chief building inspector in Brooklyn and of the present time. He related instances of strife and misunderstanding between the master plumbers and gas companies of those days and contrasted them with the more beneficial and more pleasant relationships of today.

Speaking as the Chairman of the National Convention Committee Mr. Kennedy urged that the gas company aid the National Master Plumbers Association by exhibiting and at the close of his brief talk Mr. Cuthrell rose and promised to do so.

William Wolff, New York state president, talked at length upon the efforts, both original and present, of dealer co-operation committees to foster and develop the co-operative movement. His talk was thorough and helped a great deal in enlightening those present upon dealer co-operation plan details.

◆

Massachusetts Sanitary Club Elects New Officers at Annual Meeting

At the annual dinner and meeting of the Massachusetts Sanitary Club, which was held at the Boston Athletic Association, Boston, Mass., on November 18, the following officers were elected to head the organization during the ensuing year:

P. W. Donoghue, president; Franklin E. Darling, William F. Bennett Jr., and Maurice A. Lynch, vice presidents; J. Preston Perham, treasurer, and Joseph A. Maynard, secretary.

The board of directors is composed as follows: Master plumbers: James A. Cotter, Franklin E. Darling, P. W. Donoghue, James G. Gillespie, A. E. MacDonald, J. H. McGourty, J. Preston Perham and Albert E. Roberts; Wholesalers: M. Hirschfield, Frank W. Hubbard, William F. Bennett Jr., and J. E. Slattery; Manufacturers: Maurice A. Lynch, E. B. Lane and Joseph A. Maynard.

The meeting attracted a large gathering, including many prominent members of the plumbing and heating industry and city officials. Mr. Maynard served as toastmaster, and music and a turkey dinner added to the enjoyment. R. W. McNeel, financial counselor, spoke on "The Outlook for the Future in Business and Finance."

John F. Fitzgerald, former mayor of Boston, was among the prominent guests present. He addressed the gathering on the business situation in this country and throughout the world. Edward W. Roemer, local building commissioner, was present as the official representative of Mayor Curley of Boston. He spoke on the progress of sanitation.

Other guests present were: N. M. Knudsen of Portland, Me., past president of the Maine State Master Plumbers' Association; Andrew McGlynn, past president of the Massachusetts Sanitary Club and now secretary of the state board of examiners; G. Wilbur Thompson, past president of the Newton, Mass. Master Plumbers'

Association, and also a member of the state board of examiners; Joseph J. Crotty of New York City, vice president of Central Foundry Co.; Philip J. Faherty, director of sales, Pierce, Butler & Pierce Mfg. Corp.; and James G. Gillespie, past president of the Massachusetts Sanitary Club and also past president of the Boston Master Plumbers' Association.

Obituary

T. D. Gustafson

T. D. Gustafson, plumbing and heating contractor of Minneapolis, Minn., died at his home in that city on November 22, as the result of injuries sustained in an automobile accident. Mr. Gustafson had been a member of the Minneapolis Retail Plumbers' Association for the past four years. Funeral services were held at the First Swedish Baptist church on November 24, with interment at Masonic Acacia Park.

J. B. Keddington

J. B. Keddington, who for many years was engaged in the plumbing and heating business in Salt Lake City, Utah, died recently while hunting deer. He was at one time the proprietor of the K. & K. Plumbing Company and was formerly a member of the Salt Lake City and Utah State Associations of Plumbing and Heating Contractors. During the past few years he has been engaged in other lines. He is survived by his widow and three children.

Thomas R. Mervin

Thomas R. Mervin, a member of the Master Plumbers Association of Philadelphia, Pa., and for many years a member of Mervin Brothers Plumbing and Heating Contractors, 616 North 5th street, Philadelphia, died November 11. Funeral services were held at his late residence, 1009 Pennsylvania avenue, Brookline, Pa., November 14.

Patrick H. Ryan

Patrick H. Ryan, well known Wisconsin master plumber and one of the charter members of the Wisconsin Master Plumbers' Association, died at his home in Appleton, Wis., on November 29. Mr. Ryan had been ill for ten months. He was a member of the plumbing firm of Ryan & Long of Appleton.

Mr. Ryan was born in Appleton, was graduated from local schools and joined the firm of Ryan and Long in 1898. Despite his business connections, he found time to participate in city and county affairs. He held several political offices in the city of Appleton.

A group of Milwaukee members of the Wisconsin Master Plumbers' Association, as well as members from throughout the state, attended the funeral. Among those from Milwaukee who attended were Lewis R. Friend, president of the state association; Joseph Brah, Jacob Schuh, Walter Dusold and Joseph Wittig.

David Ferguson

David Ferguson, master plumber of Montreal, Quebec, Canada, died recently at the Royal Victoria hospital as the result of injuries sustained in an accident.

Little Leaks are BIG CHEATS!

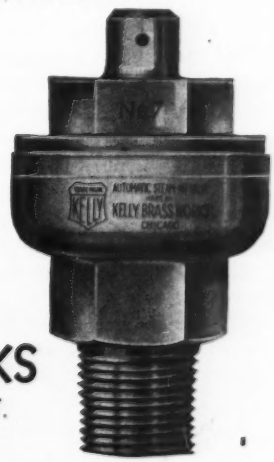
Faulty air valves give rise to all kinds of trouble in the heating system. Little leaks are the big cheats that deprive home and building owners of the full measure of comfort and convenience from heating systems.

Such leaks result in cold or balky radiators, more frequent firing periods and greater fuel costs.

YOU can put an effective stop to radiator valve trouble for your customers with one of the valves from KELLY'S complete line.

Keep supplied with KELLY Valves and use them to check the heating systems in your community. KELLY Valves operate under all pressures up to 10 pounds, venting the radiator against air and closing against steam and water.

KELLYS are completely automatic, require no adjustment and are absolutely tamperproof. Guaranteed for 5 years. Write today for complete information.



KELLY BRASS WORKS
226-32 W. ONTARIO ST.
CHICAGO

Our Readers Tell Us

Make Your Store Attractive

To the Editor:

In the campaign recently inaugurated by the Chicago and also by the National Association of Master Plumbers advocating among their members, a resale price on plumbing fixtures to meet the competition of the direct-to-you and mail order house, it seems to me it would be good policy for your publication to devote some space to educating the master plumber to price mark all plumbing fixtures in his store.

I believe, also, particular stress should be laid on the importance of the plumbing contractor making his place of business attractive and inviting to the public. Many of the plumbing shops throughout the country through lack of cleanliness reflect anything but credit upon our industry and the first thing in my opinion that should be done is to clean house if we expect to encourage the consumer to patronize the plumbing shop.

The trade press, no doubt, in the past has consistently advocated that plumbers put in a show room or install a window display of modern plumbing fixtures, and is entitled to a lot of credit along that line, but just now when our National Association is putting forth special efforts to have the master plumbers meet the existing trade conditions, it is exceedingly important for our trade papers to emphasize the necessity of the master plumbers making their shops presentable, clean and attractive to encourage public confidence and approval.

(Signed) Rupert J. Weber, Chicago,
Director, National Association of Master Plumbers.

Dealerships Are Need of Industry

To the Editor:

The plumbing industry is not failing for lack of executives or first class mechanics as there seems to be an ample supply of both. From the manufacturers down to the small plumber they seem to lose sight of the greatest selling medium ever known. What would happen to the large insurance companies today if they lost their personal contact with the public?

The automobile industry was not long in accepting the essential elements necessary to consummate a sale, the tire dealers of the country have followed their footsteps and use precedents that have been laid down by the insurance companies and all other thriving organizations.

How long will the master plumbers have to wait for the executives of the major manufacturers of plumbing goods to see the light and advantages of dealership?

The present system of disbursing through jobbers invites keenest competition, quality not considered. Recent report shows that the plumbers throughout the United States advertise less than any merchants of the different classes. The reason is plainly expressed, there is no incentive for the plumbers to advertise.

There would be a reversal of this condition immediately if dealerships were placed by the manufacturers through their respective agents. It would not only place the plumbing industry on a higher plane but would remove from it the stain of unfair competition and the sale of shoddy goods.

Trusting that you will consider this brief analysis as seen through the eyes of a plumber, I remain

Respectfully,
(Signed) Walter J. Edelblut,
Fort Myers, Fla.

Thank You

To the Editor:

The writer has received the November 14th issue of DOMESTIC ENGINEERING and hastens to congratulate you upon the splendid manner in which your representatives have reported the proceedings of the October meeting of the Central Supply Association.

You were very liberal in the amount of space you gave this assignment and the manner in which it has been presented reflects considerable credit upon your representatives. We always look forward to receiving the DOMESTIC ENGINEERING magazine, and we are of the opinion that each copy is an improvement over the preceding one.

Your publication is one that you should be proud of and it should be supported by everyone engaged in this industry.

Wishing you continued success and thanking you for the splendid manner in which you reported the proceedings of the October meeting of the C. S. A., I am

(Signed) Wm. B. Talbott.

Right Utility Co-operation Is Helpful

To the Editor:

It has been our experience that the greatest percentage of available business has resulted in those territories where the right kind of co-operative effort existed between the trade and the utilities. As might be expected, we have been anxious to see such co-operative effort increase and expand, and have directed our efforts accordingly.

That we have been at least in some measure successful is, we feel, indicated by the fact that the recent activity directed against the appliance merchandising of utilities pertained in all but a very few cases to appliances other than heating equipment.

However, that does not answer your request. We are indeed pleased with the progress that has been made in the line of co-operative merchandising on the part of the trade and the utility companies. This co-operation can have but one effect, at least insofar as automatic gas heating is concerned, and that is to increase business and profits too for the trade, the utilities and the manufacturers.

(Signed) The Bryant Heater & Mfg. Co.
Cleveland, O. Lyle C. Harvey, Sales Manager.

A Flat Rate Won't Work

To the Editor:

I was interested in the question of a flat rate as outlined in several articles contributed to recent issues of DOMESTIC ENGINEERING. Thirty or more years ago, I was in the plumbing business in this city. Those of us in the same game, got together and organized an association, for better or worse. Well, it got worse and busted.

The trouble was practically due to flat rates—Bad or worse, than a flat tire. We set prices on about everything that goes into repairs and away we went. Well, what happened to scramble the eggs? It was nothing more than the fellow who cut the prices. The same fellow who Mr. Glaser speaks of in his article.

You can't make some people honest, laws or no laws. The consequence was, a busted organization, and cut-throat game from then on. As an outsider, I don't think it can be established successfully for other reasons than the above. Some organizations can buy cheaper by buying in quantities and paying cash. Others who do all their own work without help, can take less for their labor, and so on.

(Signed) Geo. O. Miller
Miller Foundry & Specialty Co.
North Tonawanda, N. Y.

◆

P. J. Peterson, Logan, Utah, plumbing and heating contractor, has just returned with his wife, son and daughter from a two months trip to Denmark, where they visited Mr. Peterson's father, brothers and sisters.

Keeping the Chimney in Shape

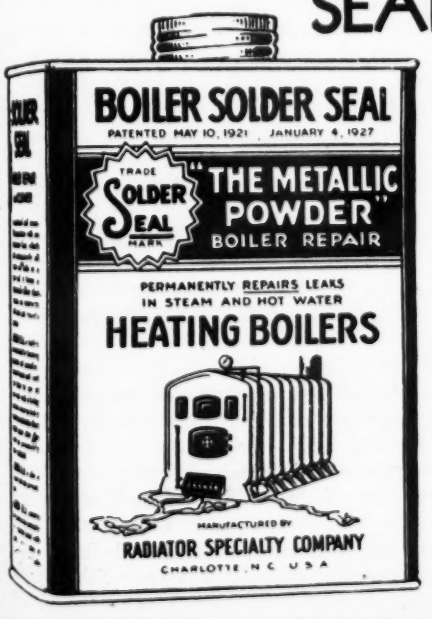
(Continued from Page 79)

Mr. DeWitt had to admit that we had turned the trick where others had failed.

Not long ago we were called to a big department store where they also had had smoke trouble for years. It had been blamed on the chimney, on the janitor, on the fuel, on everything but the right cause which was that the boiler had been assembled incorrectly. Happening on any installation such as this where they have had trouble for so long and have spent so much in an attempt to get it corrected, it is almost always necessary to gamble with them to the extent of not making any charge unless the trouble is corrected, for they are skeptical of all suggestions, but it is no gamble where one's knowledge of heating equipment and chimneys is adequate.

Several years ago there was an epidemic of smoke trouble among a certain class of heaters that had been sold by various contractors in this territory. We were thoroughly familiar with this heater and could spot the trouble at once. Those giving trouble had been designed to burn hard coal, and the flues were too narrow to permit of being used successfully in this soft coal territory. By some mistake on the part of the manufacturer a shipment of the hard coal type had been sold and installed here, and it was a long time before all of them were weeded out, and they were replaced with heaters of the same manufacture but having wider flues.

A coal company called us last winter on a job where their customer was having trouble with smoke and was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One can of Boiler Solder Seal is equal, in quantity, to two quarts of liquid—no comparison in performance.

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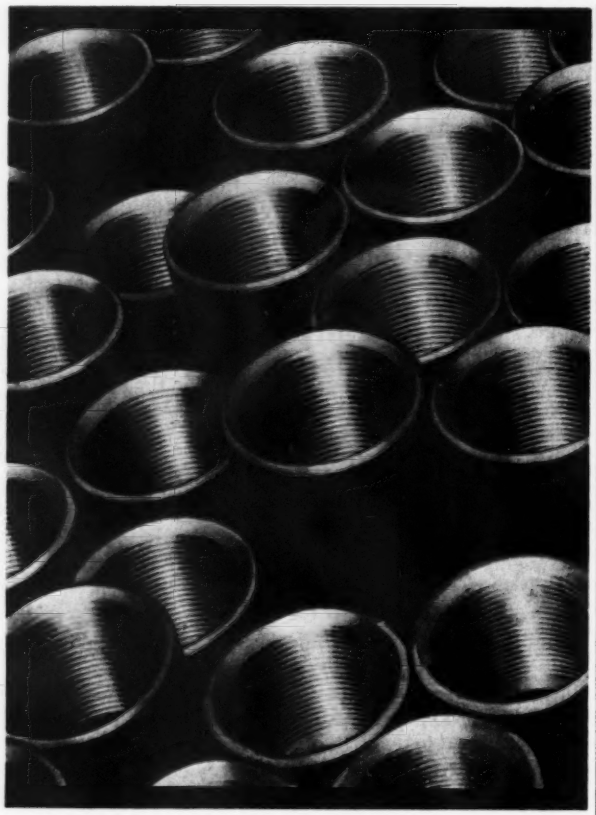

NOTE THESE THREADS

See how clean and sharp they are! Look also at the depth of threads and the freedom from broken spots and slivers of metal.

This photograph illustrates the threading typical of every length of Fretz-Moon Pipe . . . threading, which because of the precision and craftsmanship which produce it and the absolute uniformity of the metal in which it is cut, makes fitting easier and faster, and results in a high-class, tight-fitting job.

A trial of Fretz-Moon Pipe will convince you of its easy-working qualities . . . an installation will prove its economy and long life. Specify Fretz-Moon on your next pipe order.

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laying the blame on the fuel. One could well wager at a glance that the fuel was not the cause, for it was good clean free-burning lump coal, and by the process of elimination, it was also decided that it could not be the chimney, for the flue was clean as was the smokepipe, while the boiler itself was clogged with soot. What we found to be the cause of the trouble was a baffle installed in the smokehood. This baffle could not be seen and the smokehood was taken off before it was found. It had been installed there by the manufacturer with the idea in view that the boiler might be used for burning either gas or coal. Gas had formerly been used, and for that reason this smoke trouble had not become evident before.

On modernization work sometimes we run into an owner who will try to blame smoke trouble on his new equipment when in reality he had the same trouble with his old equipment but will not admit it. An instance of this kind came up last winter when we had an old boiler replacement job. The owner began raising a racket about smoke, claiming that his old boiler had never given him any trouble. To satisfy him that it was not the boiler, we looked for the trouble and found a grate opening which went straight into the boiler flue, and if it did not cause trouble before, by rights it certainly should have.

Where an owner is having gas or oil burning equipment installed, more often than not he thinks that little better than no chimney is required to carry off the products of combustion, and left to his own way about it, he would probably run a vent out through the basement wall. In one case trouble with excess condensation was found with gas burning equipment where a chimney ran up on a cold exposed outside wall and furthermore to aggravate this condition, the equipment was only used intermittently. In another instance a vent to a water heater was run into the same flue with that of an oil burning apparatus, and the result was improper combustion of the fuel.

Many people call us to clean their flues and are surprised when we tell them that it will help them only temporarily, that a flue that has a good draft will keep itself clean, and that an accumulation of soot in a flue is a clear indication of poor draft, that so-called sweeping of the flue will increase the flue area and help the draft for a time, but that the proper thing to do is to establish a good draft and the flue will clean itself and stay clean.

Since the idea of chimneys is hundreds of years old and was invented before heating plants, one would think that the average person would know more about it than he does, but he really knows very little, and for that reason it is most essential that a heating contractor have a practical knowledge of the subject. It will clear up many difficulties for him, and when an owner says emphatically of his smoke trouble, "It's your boiler," he can state with as much assurance, "It's your chimney," for he will know.

◆

Peoria, Ill., Association Moves Headquarters

The Master Plumbers Association of Peoria, Ill., has moved its headquarters from the Commercial Bank building to 329 South Adams street, Peoria. H. P. Marshall is secretary of the Peoria association.

"Unity of Purpose"

An address by A. A. PINSKI of Great Falls, retiring president, before the 34th annual convention of the Montana Master Plumbers' Association

I HAVE chosen "Unity of Purpose" as the title of my address, believing that it clearly illustrates why we are gathered here from all sections of the state of Montana. Many of you have traveled great distances to attend this convention. You have set aside your private affairs and have taken the time and gone to expense to gather here in a body. For what? To deliberate on matters that affect us all in the conduct of our business. To exchange ideas and experiences. To keep in touch with the latest developments of our industry and so that, collectively, you may come to definite conclusions and resolve to act unitedly for the best interests and welfare of the profession you represent.

You are here because you realize that an organized body of representative men of any calling is better fitted, through collective experience, than the individual, to establish practices that will be of the greatest good to the greatest number. You realize that you have to meet organized competition in all the necessities, conveniences and luxuries that the public demands today, and for which the demands are constantly changing and expanding.

You are here because you wish to improve your business and make it profitable. You are aware of the fact that those who serve the best and who can show the greatest value for the investment generally receive the favors and reap the rewards. This ambition and desire to place your business in a better and more profitable zone of the merchandising world leads you to seek ways and means to secure an equal chance for public favor with other industries. Telling your experiences, and learning the experiences of the members from various parts of the state, gives you material from which you can select that which will best serve the public and your interest. This can be defined in a few words as a "Unity of Purpose."

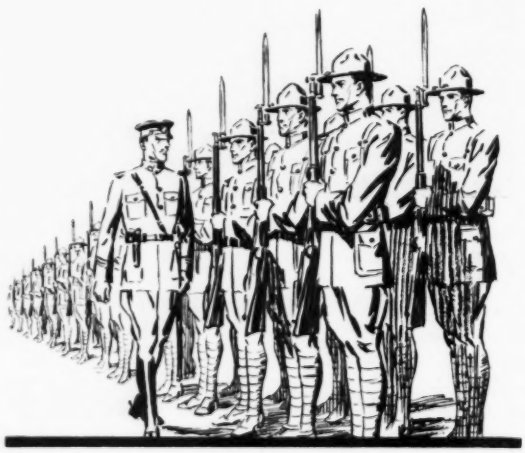
You have all heard the expression "there is nothing new under the sun." This fact has been impressed upon you in early childhood and is called to your attention repeatedly as you journey through life. Nevertheless it is human nature to be constantly seeking something new, and to reach out with eager hands in an attempt to solve the mysteries of the unknown. But if you will give this matter some thought and observe what is actually happening, you will find that this seeking for something new resolves itself into the moulding of old

ideas and practices to fit our present circumstances and needs. Practically all the new ideas and knowledge we acquire are new in application only, and, therefore, are recognized as new and original and are added to our fund of knowledge.

Did you ever stop to reflect, as day after day you perform the duties assigned you, as day after day you are striving to improve intellectually and in the practical application of your tasks, how seldom something new is brought out? When you do have an original thought, do not subject it to close scrutiny. Because, if you do, you will be disappointed and your illusion will be shattered.

Proper Use of Knowledge Brings Success

How did you acquire what knowledge you have? You learn in childhood to imitate your elders, and as you grow and are trained to increase your fund of knowledge, you reach out further and further to increase your capacity for usefulness. You take here and there from the experiences of others. You search into the past for tried and proven facts. Established precedents and facts are handed down to you from generation to generation. With this fund of knowledge you look into the future, try to reason out the best method of procedure, and make a new application of the information and practices that you have acquired. This goes to show that actually out of our own creation we know nothing new. We are adept imitators and gatherers, ingenious in converting these imitations and this gathered information to our own use, and to the service of others.



Today, more than ever, the trade association must have "Unity of Purpose." That means its functions must be closely inspected

This all goes to show that it is not always those who know the most that have the greatest success. The greatest success is attained by applying to the best advantage the knowledge we have.

The difference between success and failure is apparently very slight. Generally the successful man does not know any more than the man who is not successful. It is in the application of what one knows that leads to success or failure.

This business world is a practical world. Every industry is striving to gain a practical advantage in the field of trade. Within any given group, as competition operates, it is pretty much every man for himself. Nevertheless we all recognize the necessity of group organization, in order to protect ourselves against other aggressive groups. One group finds another group too weak to protect itself. The stronger group is ever endeavoring to convert this weakness to its own advantage. Oftentimes weakness is a temptation to go beyond acceptable practices. It is a fact of the business world that weakness invites aggression. A strong unified front is a preventive against too much aggression. It is the greatest contributing factor in the observance of the best business practices.

The Trade Association's Job

You and I know that the trade association must do something for its members. The trade association is organized for the benefit of the individual members of its particular industry. It is the duty of the trade association to establish and put into practice fundamental business practices that are best fitted for that particular industry.

At any association convention there are gathered various types of men. Men of entirely different characteristics and temperaments. Men of different beliefs, thoughts, and actions. Men whose minds arrive at conclusions from entirely different angles and views. Men who have nothing in common of a personal nature, whose likes and dislikes are as different as day and night. Men who are starting out in the business world, those who are striving for success and those who are successful.

What is the magic that draws all this diverse humanity together from all points of the compass to one central point? Certainly it is not for the entertainment provided. In this automotive age and widening scope of our diversions, we are more inclined each day to find our diversions and pleasures individually rather than in masses. It is something of a more practical nature. It must be a necessary part of our business existence that calls us from our homes and stores to attend to these gatherings year after year, to give of our time and money to perpetuate its existence so that we may meet in council year after year.

Certainly no member attending a convention expects to leave with a magic wand and go home to apply it in his community. My observation is that non-attendants expect something of this nature. And, because the rewards and remuneration are not realized in large quantities and delivered immediately, accompanied by a brass band, they believe it is a waste of time and of no benefit to them to attend the yearly convention.

The Reason for Conventions

The indisputable law—the survival of the fittest—brings us together in council for many reasons, some of which are as follows:

So that we may by the experiences of the past year apply our experiences in the most practical manner, based upon the principles of service and good business practices.

To bring out the faults and good points of our operations; to give us courage and confidence in adhering to established principles.

To dispel doubt through the assurance that a thing is

right or wrong; to educate ourselves in the best and most approved methods of disposing of our wares.

To teach us how to build up public confidence and appreciation of our merchandise; how to conduct our business on the soundest basis; how to make our business more profitable, and to dispel the illusion of profiteering.

To promote laws for better sanitation and health; to educate the public to the advantages of these laws, and a realization of what we contribute to their health, long life and happiness.

For each of us, individually, to take home with us proven ideas and practices that will perfect our organizations and methods of doing business. So that we may serve better and have our services appreciated as they should be and reap the rewards that a well conducted business deserves.

And last, but not least, to cultivate a co-operative spirit of tolerance and fair play between ourselves that will build into our association a bond of unity, that will put up a solid front against the ravages of unfair competition and questionable business practices and that will inspire us with the courage of our convictions to unitedly demand our rights, and assure us a greater measure of success—through a "Unity of Purpose."

◆

Oregon Building Congress Names Board to Settle Building Controversies

A board of reference has been organized by the Oregon Building Congress, Portland, Ore., which will act in the settlement of controversies which arise over plans and specifications in the building industry. F. H. Murphy, president of the organization, is also chairman of the new board and has appointed the following personnel to serve with him:

Fred De Temple, plumbing and heating; Fred Aandahl and C. H. Wallwork, architectural plans; S. M. Lister and Miles K. Cooper, professional engineers; Max Lorenz and Carl M. Stebinger, contractors; Charles Burton, quality surveyor; Roy Kenney, electricians; George Gruber, the guildsmen, and Homer D. Angell, the public.

This new board is expected not only to function as an arbitration body but it is also anticipated that its activities will result in increased prestige for the building industry.

◆

Need of Co-operation in Construction Work Stressed at Philadelphia Chapter Meeting

A regular meeting of the Philadelphia Chapter, A. S. H. V. E., was held at the Engineers' club on November 12. The meeting was called to order by President E. N. Sanbern. Several papers on "better co-operation between architects, engineers and contractors" were presented and discussed.

John H. Rankin, past president of the Pennsylvania Section, A. I. A., outlined briefly just what architects expect from engineers and from contractors. Mr. Rankin stated that in his opinion he thought that the registry of engineers and architects should be restricted to those thoroughly educated in their particular field, and that the engineer designing the structural portion of the

LESS *Price Competition*
MORE *Clear Profit*

—that's the Revelation

PUT a Revelation in your show room — across a corner. Tell your prospective buyers that this closet can be **installed** this way! Take off the lid and point out the obvious advantages of the simplified tripping device. Tell them of the vitreous china seat for the rubber ball . . . point out the absence of elbow connections, coupling nuts, flush valve and spud.

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Peerless-Oklahoma Company
1-11 W. 8th St.
Oklahoma City, Oklahoma

Peerless-Penna. Company
634 W. Girard Avenue,
Philadelphia, Penna.

Peerless-Tulsa Company
1645 E. 6th St.
Tulsa, Oklahoma

Peerless-Utah Company
150 West 1st South St.
Salt Lake City, Utah

Peerless-Colorado Company
785 S. Broadway
Denver, Colorado

Peerless-Missouri Company
5021 Fyler Avenue
St. Louis, Mo.

Peerless-Northern Company
Charles and Vandalia Sts.
St. Paul, Minn.

Plumbing Fixture Company
12414 Euclid Avenue
East Cleveland, Ohio

building should confine his specification to that portion of the work, and that heating and ventilating engineering should be carried on by an engineer thoroughly familiar with that design.

J. W. Pisel, representing the engineer, spoke generally of the relations between the architect and the engineer, and between the consulting engineer and the contractor. Mr. Pisel emphasized the point that the consulting engineer should specify the equipment which would be best adapted to the type of building.

W. F. Smith, representing the contractor, pointed out the difficulties that are sometimes encountered by the contractor in endeavoring to correct mistakes made by both the architect and the engineer.

Ralph B. Bencker, president of the Philadelphia Chapter, A. I. A., mentioned briefly a number of things not to be done by the engineer or contractor. His opinion is that the architect should prepare the architectural plans, working in harmony with the consulting engineer, and that the general contractor should then assume the full responsibility of furnishing exactly what is specified, and turning the building over to the owners as a first class finished project in every respect.

A. E. Dambly, representing the consulting engineer, pointed out the difficulties encountered by the engineer when he is called in after the architectural plans have progressed to a certain point. He stated that the consulting engineer and the architect should work together more closely from the very beginning on the design and plan of the building.

A. C. Edgar, representing the cntractor, reviewed generally the relationship between architects, engineers and contractors, and made a comparison between conditions as they exist today and some thirty-five or forty years ago.

At the conclusion of the various papers, comments and suggestions were presented by John D. Cassell, D. K. Boyd, Roy W. Eichberg, F. D. Mensing and P. L. Davidson.

The nominating committee presented the following names for Chapter officers for 1932: President, L. C. Davidson; vice president, M. F. Blankin; secretary, W. P. Culbert; treasurer, J. H. Hucker. Board of governors: Roy W. Eichberg, H. F. Rettew, E. N. Sanbern.

Columbia University Makes Plumbing Tests

DIFFERENT university laboratories now conduct tests to determine the strength of equipment used in plumbing and heating installations. The methods followed will interest our readers. Actual proof of this general interest was observed some months ago when a number of plumbing contractors and inspectors attended a short course at the University of Wisconsin. The greater part of the time was spent in the laboratory satisfying the curiosity and desire for accurate information of those in attendance.

More recently, a series of tests were conducted in the department of civil engineering testing laboratories at Columbia University in New York City. These investigated, specifically, the properties of several assemblies, wherein copper pipe and copper fittings were used. The test specimens consisted essentially of tee fittings assembled with 15-in. lengths of copper tubing. The open ends of the tubes were closed with dead end plugs and female fittings. Connections were made in the ordinary manner and the specimens were assembled in a vice using a 24-in. wrench for the 1½-in. and 1¼-in. sizes while a 36-in. wrench was used for the 2-in. sizes. A general view of the assembly is shown in Fig. 2.

The tests consisted in subjecting the pipe and fitting assemblies to the following physical conditions: (1) Vibration while subjected to alternate steam and water pressure; (2) Vibration while subjected to a torsion test; (3) Vibration while under vacuum, and (4) Hydrostatic (water pressure) tests.

The pipe and tee assembly which was subjected to vibration while under alternate steam and water pressure was attached to 8-ft. planks by means of straps. The planks were 2-in. by 14-in. and were rested on supports 7-ft., 6-in. on centers. One end of the assembly was fitted with a two-way inlet for the alternate admission of steam and water. The opposite end was plugged and connected to a vibrator giving longitudinal vibrations while the right angle off-set from the tee was pro-

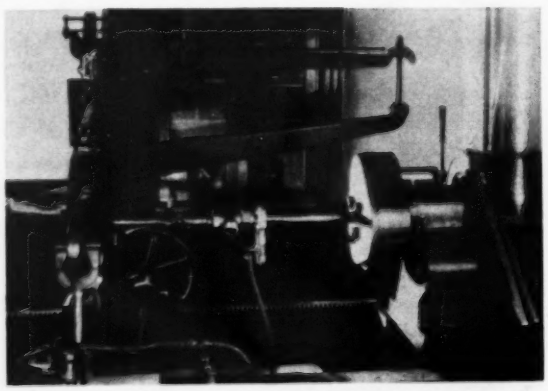

Fig. 1—This shows the torsion machine with the test specimen in place

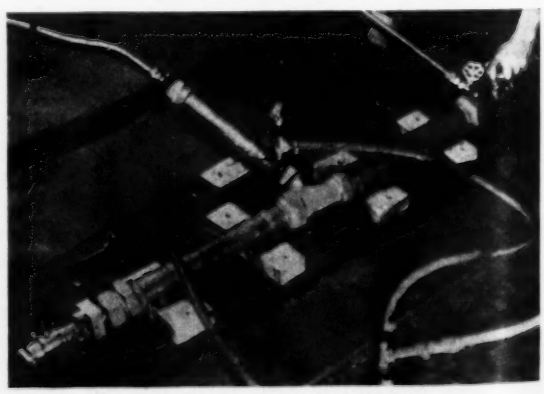

Fig. 2—Here is the general test set-up. The vibrators are attached

vided with a dead end plug fitted with a valve for drainage. A second vibrator was clamped to this off-set pipe in order to give vibrations in a vertical plane. The two vibrators operated in parallel under an air pressure of 61 lb. per sq. in. The test consisted in subjecting the unit to continuous vibration for 1 to 1½ hours while the assembly was under an alternate internal pressure

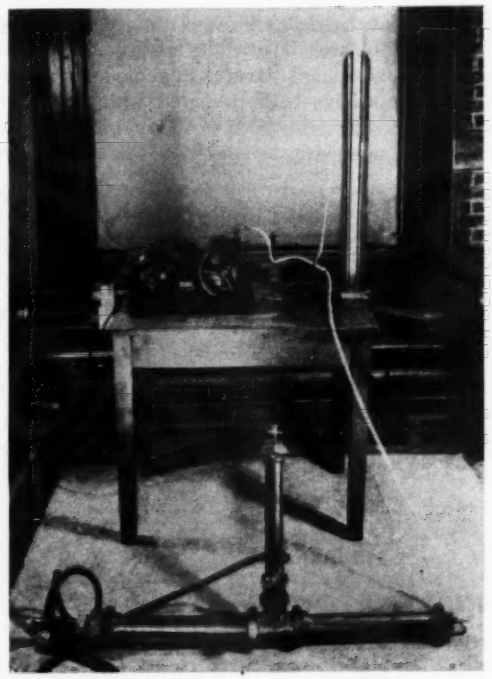

Fig. 3—The vacuum pump was connected to the assembly and was operated continuously while the two vibrators shown were operated intermittently

of steam at 112 lb. per sq. in. and 336 deg. Fahr. and water at 50 lb. per sq. in. and 80 deg. Fahr.

The test specimens used for torsion consisted of a tee and tube assembly with the ends of the tubes fitted with 3-in. plugs for gripping in a 60,000 in. lb. torsion machine. While subjected to the vibrational effect of one air vibrator, the assembly was given counterclockwise torsional moments in order to determine whether the seated flange rotated or the threaded connector unscrewed. This is indicated in Fig. 1.

The 2-in. pipe and tee assembly which was used in the alternate steam and water pressure test was subjected to vacuum while under vibration. The vacuum pump connected to the assembly was operated continuously while the two vibrators attached as shown in Fig. 3 operated intermittently.

The pipe and tee assemblies, after having been subjected to torsion, were used for the water pressure test. The ends of the copper tubes, damaged by the gripping, were cut off and were connected with dead end plugs without disturbing the tee connections. Internal hydrostatic pressure was applied until failure was produced.

These tests were made to determine the strength of the fittings and joints and were carried without failure to a point far beyond any condition arising in actual usage. The fittings were manufactured by the Hays Manufacturing Co.

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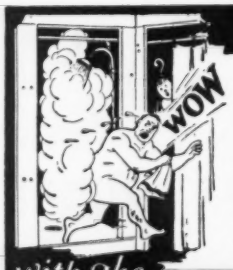

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Fig. 1941 Taber Midget Sump Pump

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Wall Covering for Plumbing Jobs

(Continued from Page 54)

A wholesaler of plumbing and heating material, who has been interested in the distribution of this type of tile, indicates a large market for tile in connection with remodeling work. In a large number of cases this wholesaler reports that, once rooms have been tiled, the old fixtures do not match up and the tiling leads to the sale of plumbing fixtures. He states also that it is difficult to sell the new colored fixtures in remodeling work unless the rooms have been prepared with the tile background to complete the picture. This, of course, would be balanced somewhat by the fact that the contractor

A kitchen with wainscoting of metal-base tile

interested in this tile, can show it to his prospect in color, and so enable the prospect to picture the entire room finished with it. On the other hand, this wholesaler says that new fixtures do not do themselves justice in plastered or painted bathrooms and that tiling seems to be necessary to supply the background. On this basis, the sale of the fixtures makes the sale of tiling possible.

Applying the Tile

Even with reference to new work, this wholesaler feels that there is no reason why the plumber, after roughing the job and bringing up the piping should be forced to wait for someone else to finish the walls before setting in the fixtures. To him it all seems to be part of the same job, and there is no reason why the plumber should not handle it.

One of the photographs reproduced shows a workman applying this tiling to a kitchen wall which has been prepared by the setting up of the grooved base. The second of these pictures shows the job as it was completed and the beautiful effect achieved by the use of this vitreous enameled steel tile. One interesting point made with reference to this kind of tile is that the strength of the tile is in the metal and hence they do not require a heavy substructure to keep them from cracking. It is said that the reduction in weight of such walls will have an important bearing in figuring wall loads.

Another of the photographs shows a bathroom in itself good looking, but with only a plastered and painted wall. Accompanying that photograph is another showing the tiling partly in place and indicates clearly the added charm of the room.

ANSWERED

A few of the Questions of most general interest asked by readers and answered by our engineers

In this issue

1—How to Estimate Water Consumption

2—How Central Heating Concerns Figure Steam Consumption

—1—

To the Editor:

In the article on, "How to Estimate Water Consumption" by H. T. Hall, published in the June 13th issue on page 58, column two, 15th line from the bottom it is said, ". . . and for a 400-ft. run, this is 38.51 lb./4 or 9.6 lb. per 100 ft." If I am not mistaken the total run has been reduced in this case to the following:

Horizontal main	200 ft.
Riser	50 ft.
Branch	10 ft.
Total	260 ft.
25% added for fittings	65 ft.
Equivalent run	325 ft.

and 38.5 lb./3.25 equals 11.85 per 100 ft., so that the whole line could be sized on the basis of 12.00 lb. drop per 100 ft., instead of 10 lb., and the size of the cold water supply could be 2½ in. instead of 3 in. Am I correct?

Palestine, Asia. S. F.

Our correspondent is to be congratulated on the careful way he evidently has gone over this article and his sharpness in detecting what appeared to look like an error. What really was assumed in the case of the highest fixture being set only 50 ft. above the level of the street main was that *all* other conditions would remain unchanged; viz., the street pressure, the maximum demand *and the total length of run.* Because the point that was being stressed was the fact that, with all other conditions unchanged, the dropping of the height to which the water must be forced had a very radical influence on the size of pipe used. It will be seen from the results that if the highest fixture set 100 ft. higher than the main the amount of pressure which could be used up as friction in the piping only amounted to 4¼ lb. per 100 ft., but just as soon as the highest fixture was only 50 ft. above the level of the main, the amount of pressure which could be used up in the main increased to 9.6 lb.—or to 12 lb., as our correspondent points out.

Now the reason our correspondent arrived at the figure of 12 lb., which he does in quite a correct way, is because he arbitrarily assumes that a fixture set 50 ft. above the street main must have a riser exactly 50 ft. high. While this assumption may be reasonable and one

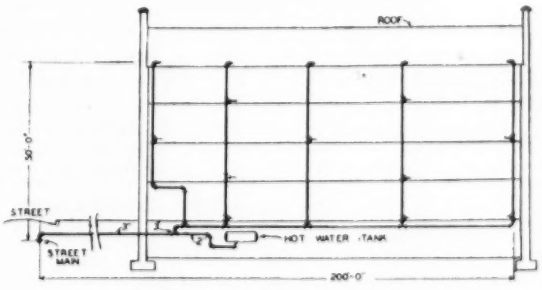

Fig. 1

that anyone would make, in this particular case it was the intention to change simply the elevation of the top fixture and to leave everything else as it was in the first calculation *including the length of run.* A riser to a fixture 50 ft. above does not necessarily have a length of exactly 50 ft. It may offset, for example, any distance in one or several breaks horizontally which frequently occur in nearly all risers. In fact such a break is shown in one of the risers in Fig. 8 in the above-mentioned

article as being parallel to the observer and other breaks could readily have been assumed as coming in an opposite direction. This riser diagram is shown in Fig. 1. But this is rather splitting hairs, and the whole thing was that our correspondent made one assumption but in writing the article an entirely different assumption was used. In such hypothetical questions some latitude must be allowed.

Now as to reducing the size of pipe; the curves apparently indicate that, if it is assumed that the riser is 50 ft. shorter and this amount deducted from the length of run assumed in the article and, if a farther deduction is made for a lesser number of fittings, the pressure drop allowable would be very close to 12 lb. per 100 ft. At the same time the size of pipe called for on the basis of 9.6 lb., drop per 100 ft., as used in the article does not give—theoretically—a 3-in. pipe but does give a pipe about 2⅝ in. Now, no 2⅝-in. pipe is manufactured and therefore the article recommended a 3-in. size. Using the 12 lb. drop proposed by our correspondent would barely come on the 2½-in. pipe line and even in that case we would not be inclined to go to 2½-in. pipe unless the layout were complete enough to permit counting and sizing every ell and tee from the street main to the farthest fixture so as to determine very accurately if the friction will be in line with the various assumptions which had to be made in the initial calculations.

—2—

To the Editor:

We would like some information in regard to supplying steam to a group of buildings from a central heating plant. This is particularly in regard to cost. We understand that the New York Steam Corp. supplies steam to a large number of buildings in New York City, and we would be interested to know the price charged per pound of steam and how they arrive at the amount used. Do they charge by the weight of the steam, do they measure the amount of condensation or have they some other method of arriving at the figure?

New York. C & S.

Our correspondent is quite correct in supposing that the company mentioned furnishes a large number of buildings with steam. The price charged is on a sliding scale as follows:

Monthly use	
For each 1,000 lb. of the first 50,000 lb. . .	$1.90 per M
For each 1,000 lb. of the next 100,000 lb. .	1.35
For each 1,000 lb. of the next 300,000 lb. .	1.10
For each 1,000 lb. of the next 550,000 lb. .	0.90
For each 1,000 lb. of the next 1,000,000 lb. .	0.85
For each 1,000 lb. of the next 2,000,000 lb. .	0.80
For each 1,000 lb. over 4,000,000 lb.	0.75

Note that this is on the monthly consumption and not on the yearly amount. On top of this base price a surcharge or credit is made amounting to $0.01 per 1,000 lb., for every 14 cents difference in the price of coal from the base price which is taken as $3.15 per gross ton of anthracite and $3.80 per gross ton of bituminous coal. This difference is computed each month on the costs of coal as delivered alongside the docks of the generating station during the previous month. The present surcharge is 2.7 cents per 1,000 lb. of steam and in the past two years this has varied from a minimum of 2.5 cents up to 5 cents per 1,000 lb. There is an adjustment made for any fractional parts of the 14 cents difference which may have been over or under the exact amount.

In regard to metering it might be said that the regular practice is to use steam flow meters on the supply lines near the point where they enter the building and in this case no attempt is made to measure the condensation. Measuring the condensation is a risky business as in this case the service company loses all water or steam escaping from leaks and any steam used in equipment without returns such as perforated pipes in water tanks, steam operated injectors, and so on.

There are many companies throughout the country supplying steam to customers and the rates vary materially; for example, a company located close to the coal fields where fuel is cheap may have rates as low as $0.50 per 1,000 lb., while other companies located in places where fuel costs are high charge three times this rate for small quantities. Our correspondent may be interested to know that the Ric-wiL Co., 101 Park Ave., New York City, has just issued a new catalog in which all the steam rates and hot water rates charged by various companies throughout the country are quoted for 1930-31.

Questions Answered and Discussed by Readers

How the Question Was Answered

The following question was asked in the issue of November 14, and the accompanying answer is by a reader:

A heating plant has the following loads: 10,000 *sq. ft. of tubular cast iron radiation,* 2,000 *sq. ft. of cast iron wall radiation, three unit heaters delivering* 86,000 *Btu. per hr., each, and the heating of a maximum of* 150 *gals. of water per hour from* 50 *to* 150 *F. What will be the load on the boiler in equivalent direct radiation of* 240 *Btu.?*

How Would You Answer This Question?

An electric pressure water supply system is installed in the basement of a home. An electric light is to be installed above it. The requirements are that the pump be operated independently either by a switch up-stairs or by one at the motor. Also, the light is to be taken from the same circuit and is to be operated by a pull chain socket. What is the minimum wiring necessary?

Answers based upon your experience, and suitable, will be paid for and published in the January 9 issue.

THE question involved here is one which constantly is coming up on heating jobs where the contractor is required to give a guarantee of performance and temperature maintained. It is a particularly knotty problem due to the fact that the weather seldom is accommodating enough to produce the outside conditions specified in the guarantee at the particular time when the test has been

arranged for and, as a result, the test has to be run under another set of conditions and, at the conclusion, the results are open to doubt as to what will occur some time when the guarantee conditions are fulfilled by the weather.

A formula which indicates very closely what would occur with a steam system which will produce 70 F inside with an outside temperature of zero is that which says

"Temperature inside equals 70 plus 0.682 × temperature outside."

In this case the temperature outside was 17 F so the room or house should show a temperature of

70 plus 0.682 × 17
or
81.6 F

Now the house did not show 81.6 but only averaged 78 F which would seem to indicate an insufficient heating system to comply with the guarantee but it must not

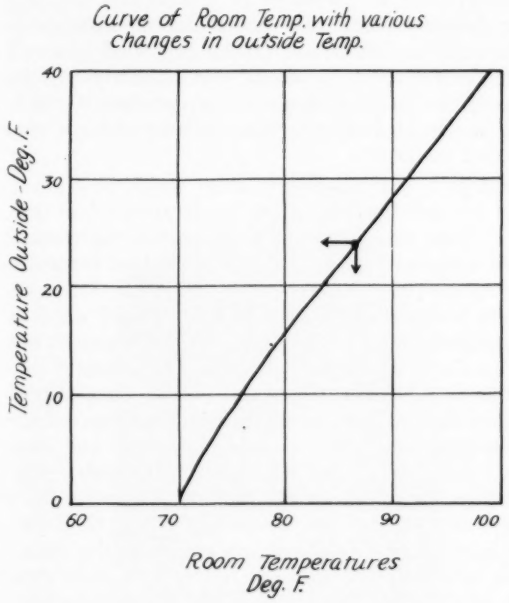

Fig. 1

be forgotten that there was a 25-mile wind blowing at the time and it is general to allow 1 F for each mile of wind over 15 miles per hr. This is because the ordinary heating system is supposted to take care of all losses occurring at any wind up to 15 miles per hour.

This is based on the theory that it is as hard to heat when it is 10 F and with a 25-mile gale as it is at zero with a 15-mile wind. If the wind is taken into consideration it is found that the equivalent outside temperature was

17 F — (25 — 15) or 17 —10 or 7 F equiv. temp.

and refiguring the formula based on the equivalent outside temperature of 7 F gives

70 plus (0.682 × 7) or 70 plus 4.77 or 74.77 F

when the house actually reached 78 F showing that the heating system is ample to comply with the guarantee of 70 F in zero weather—with wind not to exceed 15 miles per hour. Therefore it would seem to all intents

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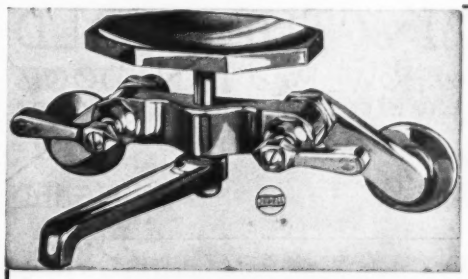

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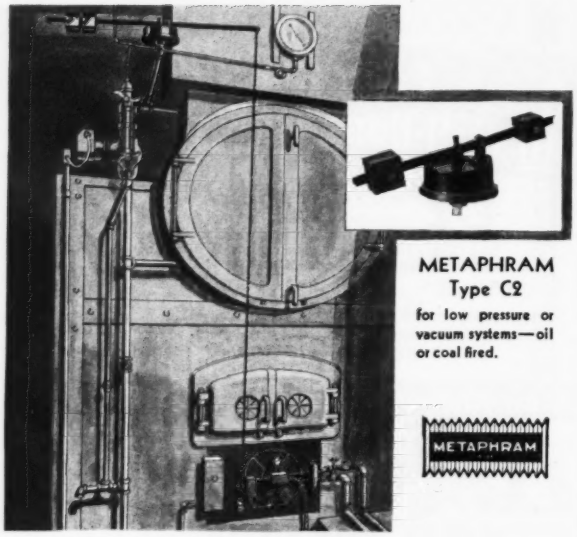

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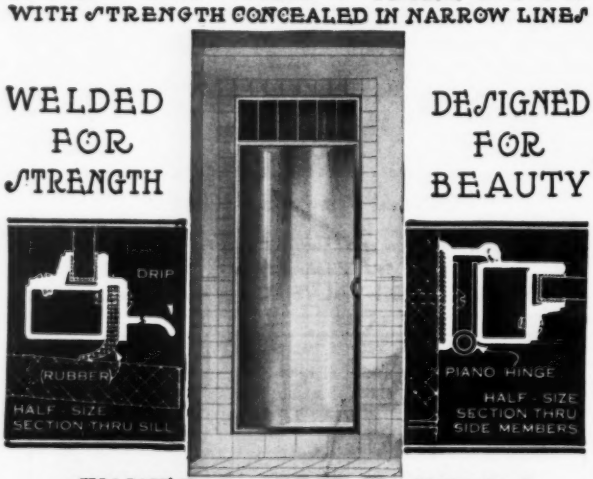

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and purposes that this test showed that the system was capable of doing all that the guarantee covered.

It must be remembered that no formula can give absolutely accurate results in this respect; in the first place there is a slight difference in the rate of air flow across the radiator as the temperature of the room approaches nearer and nearer to that of the steam. If the room reached 215 F, or the same temperature as the steam, there would be no flow of air over the radiator as all transmission of heat has ceased. Similarly at temperatures in the room below 70 F the air flow is speeded up due to the greater heat flow from the radiator and so the radiator efficiency is slightly changed. At and around 70 F in the room, however, there is little variation and the change is so small it may be neglected.

The same may be said for the matter of wind allowance; it will be seen that if it were 70 F outside and a 70-mile gale were blowing it would be impossible to allow 1 degree for each mile of wind or the equivalent outside temperature would be 70 — 70 or zero, which is an absurdity. At temperatures in and around the normal ones, however, these allowances and the formula give quite accurate results and can be depended upon. For this reason there is no doubt that with a zero outside temperature the heating system in question would hold 70 F inside provided the wind velocity did not exceed 15 miles per hour.

In Fig. 1 is given a small chart which may prove of value for tests made at other temperatures than that of zero. This chart shows a curve which represents the inside temperature which should be attained for any outside temperature between zero and 40 F for a steam system designed and capable of holding 70 F inside with an outside temperature of zero. To use this chart simply run up the scale marked "Outside Temperature" on the left hand side until the actual outside temperature at the time the test is made is reached. Then proceed across to the right until the curve is intersected and directly under this intersection the room temperature will be found on the scale running horizontally across the bottom of the sheet. For example, locating 17 F on the left hand scale and proceeding across to the right the curve will be found to be intersected at a point directly over 81 F on the bottom scale which checks within 0.6 degrees with the 81.6 found by calculation. No allowance is made for wind velocity in this chart and that correction—if any—must be made before using the chart. Thus it was found that, with wind correction, the equivalent outside temperature was 7 F and using this corrected outside temperature on the chart in the same way indicates an inside temperature of 74 F or within 0.7 degrees of that calculated.

In the Small Industrial Plant

(Continued from Page 87)

would be there whether automatic temperature control was installed or not. So the saving in coal would amount to

6,832 M lb. × $0.32, or $2,186.24

and an estimate secured on the cost of installing the automatic control approximated $3,000. Deducting a 10 per cent charge for interest and depreciation on the temperature control installation (or $300.00) from the

gross savings of $2,186.24 left a net saving of $1,886.24 which would more than wipe out the entire cost in less than two heating seasons.

The water supply system was gone over in just as thorough a manner and numerous changes and repairs were recommended although the exact saving in relation to this branch of the work is much harder to demonstrate due to the owner not having records of how much water was being used in the manufacturing processes and the difficulty of estimating this water through wide variations of range.

While the recommendations above have not yet been acted upon by the owner it only goes to show that in this one plant there is at least between $9,000 and $12,000 worth of work which really should be done for the owner's benefit with the incidental profit to the contractor who has the initiative to show the owner where it is, how much it will cost and what he will save.

How a Second Plant Showed Savings by Low Pressure

In a second plant there was only one building of reinforced concrete construction as far as the columns and floors were concerned with glass occupying all the space between the columns and down to within about thirty inches of the floor, the space under the windows

being filled in with a 12-in. brick wall. The building included four floors and a basement, which really made a five story structure, and was used entirely for light manufacturing except a small portion in the front of one of the floors where the offices were located. The heating here also was by means of a hot blast system, the apparatus being located in the power house about 50 ft. distant with underground ducts run to the bottom of vertical flues which extended up through the building and from which, short overhead duct systems on each floor distributed the air. (See Plot Plan, Fig. 5.)

The plant was operating on high pressure steam and was developing what power and light they used in their own plant in the power house. The fan heater was on exhaust steam with a live steam make-up, and on cold days considerable live steam had to be used. There also was the item that the fan had to be turned on very

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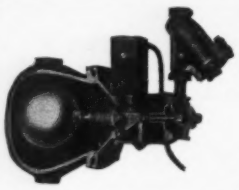

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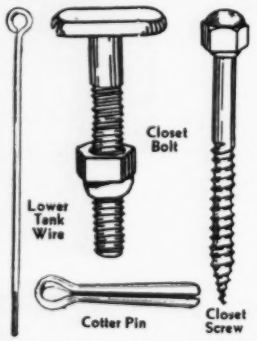
Brass Closet Bolts, Brass and Copper Refill Tubes, Brass Float Rods, Shower Curtain Hook, in fact, an extremely large line of Plumbers' Specialties.

See Page 851 of Domestic Engineering Plumbing and Heating Catalog. These specialties will save time and money for you.

Hindley Mfg. Company
Valley Falls, R. I.

HINDLEY SPECIALTIES



There is no surer way to make a pipe wrench safe and strong than to make it all steel *like TRIMO*

• • years of experience dictated the design

• • common sense dictated all steel construction

Made by the world's leading makers of pipe tools

TRIMONT MFG. CO., Roxbury (Boston), Mass.

OVERTON *Roof* **FLASHINGS**

¼ PITCH

YOUR jobber has Overton Roof Flashings or can get immediate delivery.

It just takes a few moments to install an Overton Roof Flashing. There is no cutting to be done, no time-consuming adjustments. Fits extra heavy or standard pipe and any pitch roof.

BUTLER MFG. CO.
MINNEAPOLIS, MINN.

early in the morning on cold days in order to have the building at all comfortable by the time the employes came to work; this involved operating the whole power plant and a liberal use of live steam at a time when no other need for either existed. A study of the current requirements showed that current could be purchased for practically the same cost at which it was being generated and that—if current were purchased—the boiler pressure could be cut down to 15 lb. or less, thus making a low pressure plant and doing away with the necessity of engineers' and high pressure firemen's wages.

The problem then arose as to what could be done with the heating plant to reduce the cost of heating and to speed up the action of the apparatus. Calculating the heating losses showed that on a zero day the heat radiated and lost from the building approximated 20,000 sq. ft. of E.D.R. or 4,800,000 Btu. and that for average winter weather with 35 deg. Fahr.. outside the loss would be approximately half of this or 2,400,000 Btu. A test on the apparatus when it was 17 deg. Fahr. outside showed a temperature of 145 deg. Fahr. for the air at the fan and 138 deg. Fahr. where it entered the building. The heat loss from the building at 17 deg. Fahr. outside was 53/70 of 4,800,000 Btu.. or 3,650,000 Btu., and the quantity of air at 138 deg. Fahr. to take care of that loss was

$$\frac{3{,}650{,}000 \text{ Btu.}/(138 - 70) \times 60}{55} \text{ or about } 49{,}000 \text{ c.f.m.}$$

and, with the same temperature air, the c.f.m. required for extreme conditions would be about 64,000 c.f.m., and for average winter conditions about 32,000 c.f.m. This checked very closely with what the fan was rated at for the speed and resistance it had to work against.

The scheme of recirculation of 75 per cent of the air was then considered although it involved various difficulties owing to the apparatus being in another building. First the saving was computed for average winter weather of 35 deg. Fahr. and the difference, between taking in the air from the outside (as was being done) and of taking it from the building at 70 deg. Fahr., was worked out. This showed that the saving per hour would be

$$\frac{75\% \text{ of } 32{,}000 \times (70 - 35) \times 60}{55} \text{ or } 916{,}000 \text{ Bt.u. pr hr.}$$

and a deduction was made from this to allow for heat radiated from the return circulation duct which was based on the supply duct losing 7 deg. Fahr. in temperature when the outside temperature was 17 deg. Fahr. As the air in the supply duct was around 142 deg. Fahr. $\frac{(145 \text{ plus } 138)}{2}$ and the outside was 17 deg. Fahr. the temperature difference was 142 — 17 or 125 deg. Fahr. and the temperature drop was 7 deg. Fahr. or about 1 deg. Fahr. for every 18 deg. Fahr. of temperature difference. On the same basis the drop in temperature of the return air would approximate

$$(70 - 35)/18 \text{ or about } 2 \text{ deg. Fahr.}$$

So a reduction for average winter conditions of

$$\frac{75\% \text{ of } 32{,}000 \times 2 \times 60}{55}$$ or 52,300 Btu. was made.

This left the net saving per hour

916,000 Btu. — 52,300 Btu. or 863,700 Btu.

and

$$\frac{863{,}700 \text{ Btu.} \times 24 \text{ hrs.} \times 200 \text{ days} \times *\$6.35}{8{,}000 \times 2{,}000}$$

gives a saving in coal per annum of $1,645.35.

Then a scheme of installing the circulation duct was worked out and the approximate cost was ascertained. The scheme used is shown in Fig. 5, which also indicates a general plan of the building which will be seen to be ell shaped with the power house in the inside corner of the ell. The cost of installing the recirculation duct with the necessary new dampers, grilles, etc., came to $3,730.00, while the cost of taking the engine drive (which was being used) off the fan and the substituting of a four-speed motor in place of the engine amounted to $1,200.00 additional.

Taking the matter of recirculation entirely apart from all other items the figures show the following:

Saving in fuel	$1,645.35
Less carrying charge of 10 per cent on $3,730.00 or	373.00
Annual net saving	$1,272.35

and the time required to pay off the cost of recirculation as about three heating seasons.

* Cost of the coal.

Considering the other changes together with recirculation the result is:

Saving in coal	$1,645.35
Saving on engineer	2,860.00
Saving in using two L. P. firemen	1,040.00
Gross saving	$5,545.35
Extra cost of current for fan	$1,100.00
Carrying charges 10 per cent on $4,930.00	493.00
Total deduction from gross saving	$1,593.00
Gross saving	$5,545.35
Less deductions	1,593.00
Net saving	$3,592.35

and the time required to pay off the total investment about a season and a half.

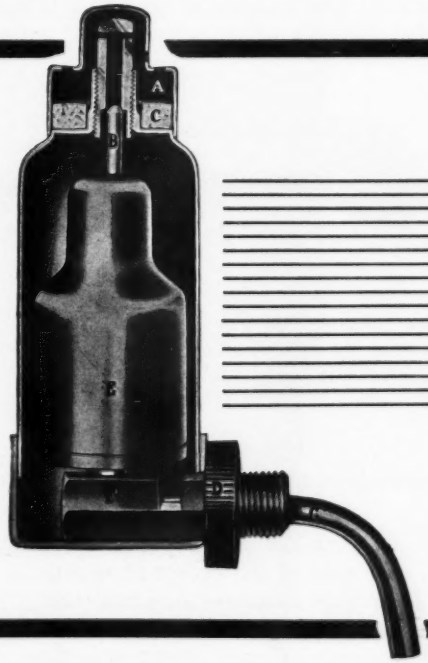
These figures are considered striking enough to cause any contractor to stop and take notice. When it is considered that they do not take in anything much outside of the coal pile and cover nothing in the shape of general repairs the amount of work really necessary to be done in each of the plants cited is way above the figures quoted. As the competition between manufacturers is growing keener every day it is doing a real kindness to demonstrate how economies are possible in some of the heating and ventilating costs in industrial plants with a chance that a very good percentage of them will be intelligent enough to take advantage of the items after they have been pointed out. And that, Mr. Contractor, is *your* job.

◆

Boonville, N. Y.—Preliminary plans are in progress for construction here of a $100,000 theater, with a seating capacity of 1,100 persons, by Adirondack Amusement Co.

KEENEY No. 100

AIR VALVE



When you can't get new business get the old. There are plenty of heating systems right in your own neighborhood that would be much better off after KeeneyAirValves were installed.

Your customer will appreciate it too. Here is a safe, economical means for him to save fuel, have greater heating comfort and convenience and in fact modernize his heating system completely.

Tell your prospects about Keeney Air Valves. But let us tell you the complete story first. Write for details.

MANUFACTURERS AND WHOLESALERS—
Write for our new catalog—just off the press

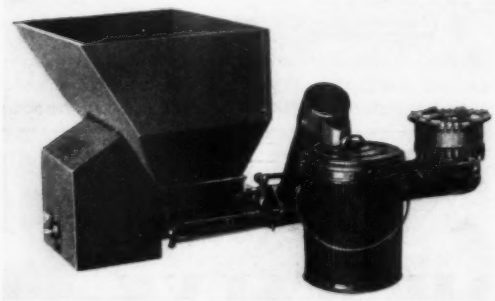
THE KEENEY MFG. CO.
NEWINGTON, CONN.

Items for STORE, SHOP *and* JOB

THIS week, distributors of building materials met in Chicago to interpret what kind of homes and what type of conveniences people will require five or ten years from now. The items selected for these columns indicate such trends. Apply them in your store and shop and on the job.

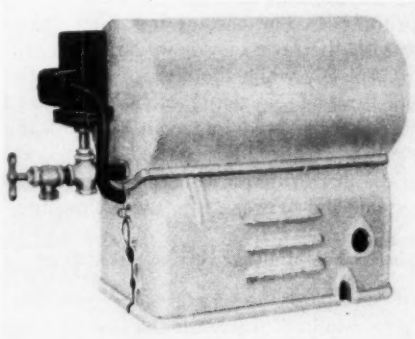
Soft Coal Stoker Designed To Remove Ashes

Of two stoker models which have just been announced, one is for operation with bituminous coal and the other is for use with anthracite coal. These have been developed for the small home field and one of the features includes provisions for removing and depositing the ashes in a metal container.



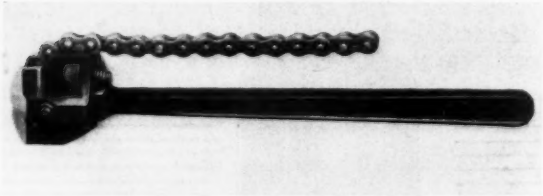
A Shallow Well Pump

The accompanying illustration shows a shallow well water system which has been offered as containing new and improved features of design. As a convenience item, it has been built to fit in the space under a kitchen sink or in the lower compartment of a cupboard. It is rated as being capable of pumping 100 ft. from the source of supply and lifting up to 22 ft. above the water level.



Chain Wrench With Reversible Feature

A pipe wrench of the chain type has been announced. It has been adapted for close work and its reversible features were designed to permit its being operated in either direction without removing the wrench from the pipe or adjusting the chain. Also, it permits ratchet motion. An adjusting nut and bolt provides a means for tightening the grip on the pipe when all possible motion is required due to close working quarters.

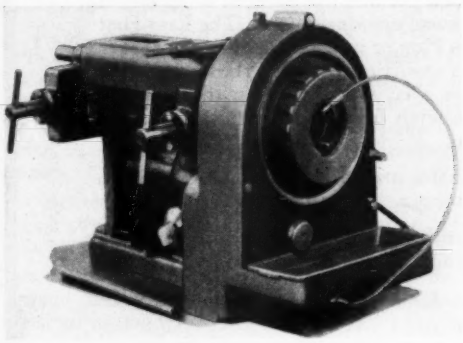


Readers will find in this department news of our industry's progress in the manufacture of equipment. You can read of the efforts of manufacturers to develop products which will increase customer demand, will make shop methods more efficient and will simplify installation.

A letter to the editor of "Domestic Engineering" will bring you the name and address of the manufacturer of any product in which you are interested.

Pipe Threader Is Improved in Design

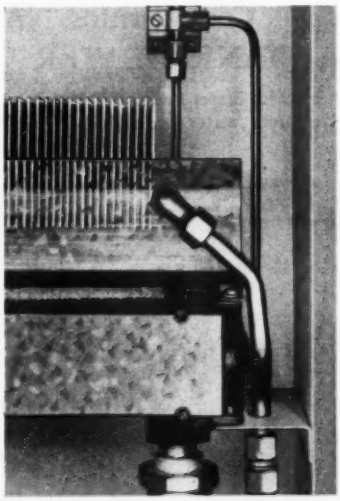
Improvements in the design of one of the pipe threading machines have been announced. The equipment is powered by a 110-volt reversible motor and operates from the ordinary electric light socket. The die head is made to revolve and the pipe which is being threaded is



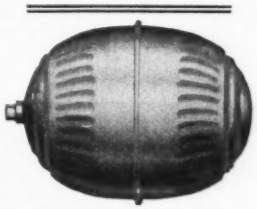
held stationary. It is claimed that the feed is automatic and that the jaw chucks are self-centering. An oil pump provides lubrication and the threading die may be replaced with a cutting head and reamer. Its range varies from ½-in. to 2-in. pipe with the possibility of using bolt-threading dies.

Item For Humidifying and Ventilating

Announcement has just been made of a humidifier which operates on the convection principle. It has been developed to be installed in cabinets on any steam or hot water system. Humidification takes place as a result of



the heated air passing over a wood fibre surface. It may be sold as a part of the heating system in a new installation and may be placed in the wall as a concealed unit or it may be connected to an existing job. The interior of this unit is shown in the accompanying illustration.



FEDERAL FLOATS

THE Federal Float is the one you want for factory, store, hospital and public building installations. It has been designed to operate under the most severe conditions. Try them and see for yourself how perfect they have been made.

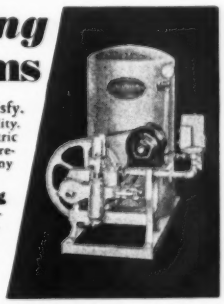
THE REICHERT FLOAT & MFG. COMPANY
2238 Smead Avenue ◆ Toledo, Ohio

Quick Selling Water Systems

Hoosier Systems both sell and satisfy. Famous for their sturdiness and dependability. Complete line includes wide range of electric or gasoline powered units to meet any requirement. Shallow well or deep well. Many exclusive features at no greater cost.

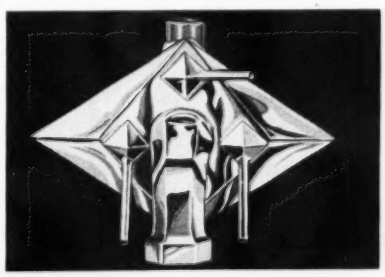
Write for Catalog

Complete catalog and interesting dealer proposition mailed on request without obligation.



FLINT & WALLING MFG. CO.
76 OAK STREET, KENDALLVILLE, IND.

Modern Money Makers



Beauty and utility are happily combined in the new tub and shower valves recently developed by NIBCO. They embody many exclusive features which will help you to secure more business. Send for descriptive literature and prices on the complete line. Ask for Bulletin A-700.

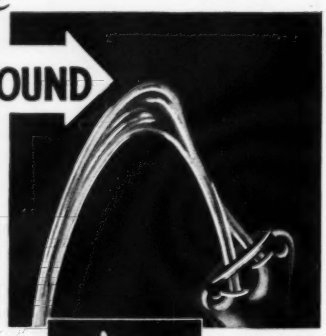
NORTHERN INDIANA BRASS CO., Elkhart, Ind.

The Original Copper-Steel Pipe!

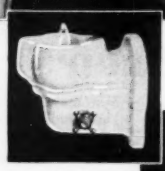
TIME-TESTED and quality proven—Backed by the experience and resources of the largest manufacturer of wrought tubular products in the world. Recommended for the places where pipe is exposed to atmospheric corrosion due to alternate wet and dry conditions. Ask for Bulletin No. 11, describing—NATIONAL Copper-Steel Pipe.

NATIONAL TUBE COMPANY, Pittsburgh, Pa.
Subsidiary of United States Steel Corporation

Note the DRINKING MOUND



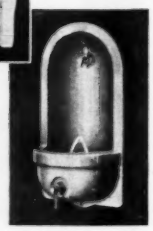
It is a distinguishing and an exclusive feature. The two-stream projector provides a localized drinking mound, practical, sanitary and convenient to drink from under all conditions.



The HALSEY TAYLOR *two-stream projector*

Sanitation Assured

Because Halsey Taylor Drinking Fountains assure maximum sanitation, they are the preferred specifications for schools, hospitals, and for public buildings everywhere. A wide range of practical designs to fit varied needs and expenditures.



Illustrated . . . a popular wall fountain . . . a semi-recess type with glass filler.

The Halsey W. Taylor Co., Warren, O.

HALSEY TAYLOR Drinking Fountains

ROBERTSON

Easy Foot Waste

Constructed without intricate working parts in the overflow or waste tubes, thereby eliminating any possibility of becoming clogged and getting out of order. This construction permits the water to drain out of large waste opening *quickly*. The Easy Foot Waste Plug or outlet is so designed that it creates a swirling motion to the water which is most effective in cleaning the waste. It closes with pressure—insuring against leaking.

Eliminates unsightly and unsanitary chain and stopper.

No bending or stooping necessary to operate. Simply touch it with the toe.

Send for your sample today

H. B. ROBERTSON COMPANY
2533 N. Ashland Ave. Chicago, Illinois

THE M. S. LITTLE MANUFACTURING COMPANY HARTFORD

CONTINUOUS SINK AND TRAY WASTES

Unlimited variety of combinations of parts to meet local regulations (including the Patented "Duo.")

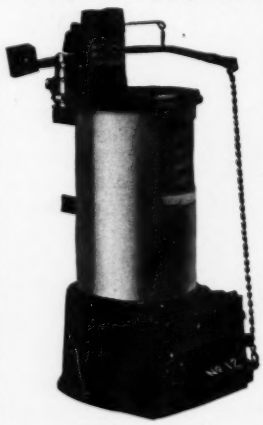
Prompt Shipment from stock.

THE M. S. LITTLE MFG. CO.
HARTFORD ∴ ∴ CONNECTICUT

HOT WATER

Fast, Clean, Low Cost *with the* Copper Coil, Coal Burning NATIONAL TANK HEATER

Copper coil provides faster heating. No corrosion or cracked castings. No rusty water-bronze fittings. Burns coal at low cost at great saving over automatic heaters. Abundant hot water 24 hours a day with little attention. Aqua-Matic Regular outfit controls steady fire. An efficient well made heater with fire brick firepot, triangular grates, enclosed base. Three sizes. Write for special deal and 52-A Bulletin.



(Cut away view)
Aqua-Matic Regulator attached. Red vitreous enamel jacket

THE NATIONAL PIPE BENDING CO.
Est. 1883

Storage Heaters, Instantaneous Heaters, Feed Water Heaters, Coils, Bends

FRE FLO Heating Element

174-M River Street,
New Haven, Conn.

BOSTON NEW YORK PHILADELPHIA

Large Construction Projects

Even though new construction is at a low ebb compared with recent peak years, the fact remains that new projects are being started every day. Listed below are just a few of the larger building operations, either contemplated or only recently started.

Minneapolis, Minn.—Bids are being received for the construction of a two-story parochial school and dormitory building for the Holy Rosary parish, at Eighteenth avenue South and Twenty-fourth street, to cost about $200,000. Stebbins, Haxby & Bissell, 1111 Nicolett avenue, are the architects.

Des Moines, Ia.—Work will start this fall on the construction of a U. S. Veteran's hospital in West Des Moines, to cost $1,300,000.

Sioux City, Ia.—Plans are being prepared by Beuttler & Arnold, architects, for the new post office and federal building to be built at Sixth avenue and Pearl street, at a cost of $1,025,000. The building will be four stories high, 120x236 ft.

Minneapolis, Minn.—Welander-Quist Co., 1825 Chicago avenue, is having plans prepared for a two-story mortuary building to be built at Hennepin avenue and 35th street, at a cost of $150,000.

St. Paul, Minn.—M. J. O'Neil, 607 New York building, has been awarded the plumbing and heating contract in the new eight story state office building being built at Wabasha and Park streets, at a cost of $1,500,000. The plumbing and heating contract amounted to $102,358.

Greensboro, N. C.—George H. Rommell Construction Co., Louisville, Ky., has the $569,000 contract on the Federal building, in this city.

Rockford, Ill.—The W. T. Grant company store will erect a new building to cost $100,000. Construction will start not later than February 1.

Chicago, Ill.—Fisher Construction Co. has the contract for the new project of the Madison-Keeler Market Co., which will be one of the largest food markets in the country. The project will cost $600,000, and will be located at 4200 W. Madison street.

Brooklyn, N. Y.—Plans for a $1,000,000 Queens medical arts building will soon be filed, according to Benjamin Braunstein, Jamaica architect. Construction is expected to start January 1, 1932.

Springfield, Ill.—A $300,000 construction program which will make the St. Nicholas hotel the largest in the city has been announced. Work will start in January, 1932.

Chicago, Ill.—E. W. Sproul Construction Co., 2001 W. Pershing road, has the general contract on the $150,000 building for the Great Atlantic & Pacific Tea Co.

Brooklyn, N. Y.—A $750,000 high school will be built by the Diocese of Brooklyn, on Vanderbilt avenue, between Lafayette and Greene avenues. J. Frederick Cook, Brooklyn, is the architect.

Atlanta, Ga.—Bids will be opened December 18 for construction of Atlanta's new $2,975,000 post office building.

Chicago, Ill.—R. C. Wieboldt Co. was low bidder, with $2,182,200, for reconstruction of the interior of the Fine Arts building.

St. Louis, Mo.—The Del Line Co. is planning construction of a 42-family apartment building here, to cost $200,000.

Chicago, Ill.—Klee Bros. will remodel its store at Lincoln and Belmont avenues, at a cost of $100,000. The architect is A. Epstein, 2001 W. Pershing road.

Bismarck, N. D.—Plans for the construction of North Dakota's proposed $2,000,000 state capitol are expected to be completed this month. George A. Bangs is chairman of the state capitol commission.

Lexington, Ky.—Construction work on Lexington's new $760,000 post office and Federal building is expected to start in January.

New York, N. Y.—The Billig Building Corp. will begin immediate construction of a $600,000 110-family apartment house on Pelham Parkway. H. I. Feldman is the architect.

Aurora, Ill.—H. G. Christman, South Bend, Ind., has the general contract for construction of Aurora's new $210,000 postoffice.

Brooklyn, N. Y.—Contract for the general construction of an addition to Public School No.. 79, Whitestone, has been awarded to the Jonwal Construction Co., on a bid

Some of those attending the recent annual convention of the Pennsylvania State Association of Master Plumbers, held at Allentown, on a sightseeing trip to Indian Trail Park

YOUR FITTING PROBLEM IS SOLVED *when you say* "SQUARE GEE'S"

SQUARE Pipe — "GEE" Fittings

MALLEABLE, CAST IRON — DRAINAGE, BRASS

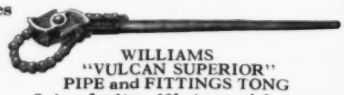
THE GRABLER MANUFACTURING CO.

New York - - - - - - - - Chicago - CLEVELAND, OHIO *San Francisco Los Angeles*

BETTER PIPE TOOLS

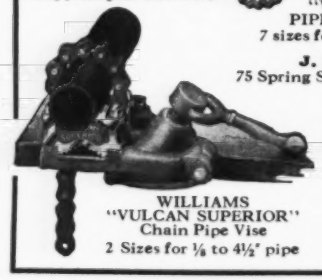
Exclusive Advantages
Modern Design

Buy from your distributor



WILLIAMS "VULCAN SUPERIOR" PIPE and FITTINGS TONG
7 sizes for ⅛ to 12" pipe and fittings

J. H. WILLIAMS & CO.
75 Spring St. New York, N. Y.



WILLIAMS "VULCAN SUPERIOR" Chain Pipe Vise
2 Sizes for ⅛ to 4½" pipe

WILLIAMS VULCAN SUPERIOR CHAIN PIPE TOOLS

STEEL
IRON

CHALLENGE NIPPLES

BRASS
COPPER

They fit fittings

Challenge Nipples are threaded more accurately than most pipe fittings.

Made only from first quality tested and inspected pipe, cleanly cut, chamfered and reamed.

They are thoroughly cleaned, free from oil, scale and chips, and have a rust resisting finish—an exclusive Challenge feature.

If your dealer cannot supply you with the trouble-proof Challenge Nipples, write us for the name of the nearest Challenge dealer.

FRICK-REID SUPPLY CORP.
Nipple Division
117 Sandusky St. Pittsburgh, Pa.

REG U S PAT OFF
TONCAN
COPPER
MO-LYB-DEN-UM
IRON PIPE

The longer lasting iron pipe for use where conditions of service are severe.

Write for book "Pipe for Permanence"

REPUBLIC STEEL CORPORATION

GENERAL OFFICES YOUNGSTOWN, OHIO

of $309,300. Plans and specifications have been approved for a new $195,000 Public School No. 2, at Jackson Heights, and for a $224,300 addition to Public School No. 16, at Corona.

Hoopeston, Ill.—John Montgomery, of Danville, has the general contract for construction of the new building for the Sprague-Sells Corp., to cost approximately $100,000.

Houston, Tex.—Southern Pacific Railroad will soon begin construction of its new $3,500,000 passenger station here.

Elgin, Ill.—Contract has been awarded by the board of education for the construction of a new $200,000 school building here.

Champaign, Ill.—Bids are being submitted for a new $300,000 Women's Residence hall at the University of Illinois.

Wayne, Nebr.—C. E. Atwater Co., Grand Island, has the general contract on the Wayne Teachers' College dormitory, on a bid of $106,390. E. L. Rodwell, Omaha, has the $17,960 plumbing contract.

New York, N. Y.—Marc Eidlitz & Son, Inc., has the general contract for the new Columbia University library, to be erected at a cost of $3,500,000.

Glencoe, Minn.—Plans are being prepared by George Pass & Son and P. T. Rockey, Mankato, architects, for a three story junior and senior high school building, to cost $250,000.

Chillicothe, Ohio.—C. A. Hooper & Co., Madison, Wis., have been awarded the plumbing, heating and wiring contract in the new U. S. Veterans' hospital being built here. The plumbing, heating and electric contract was $149,650.

Pine Ridge, S. D.—George C. Hunt, Huron, has been awarded the plumbing and heating contract in the new girls' dormitory building being built at the Pine Ridge Indian Agency. The plumbing and heating contract was $14,289. The building will cost about $150,000.

Winnebago, Nebr.—Contracts have been awarded for the construction of a hospital building at the Indian agency here, to cost $200,000.

Butte, Mont.—Bids will soon be taken for the construction of the new post office addition here, to cost $300,000.

Clinton, N. Y.—New Central school building, to cost $350,000, will be built in this village next year. A recent election carried the project, and plans are now being made.

Storrs, Conn.—Connecticut Agriculture College is having plans prepared by Perry & Bishop, 17 Court street, New Britain, for a home economics unit to cost $250,000.

Quincy, Mass.—The New York, New Haven & Hartford Railroad Company has plans for a new Quincy Adams station and the abolishing of a grade crossing in connection with the project at a total cost of $700,000. A. S. Tuttle, company engineer at the South Station, Boston, prepared the plans.

Left to right: John Mearn, St. Louis, Mo.; J. M. Simmons, Wichita, Kans.; W. H. Driscoll, New York City; A. R. Herske, sales promotion manager, American Radiator and Standard Sanitary Corp., New York City. Photos taken at the annual convention of the Heating and Piping Contractors National Association, held recently at Louisville

New Trade Literature

Underground Water Service Fittings

The Parker Appliance Co. of Cleveland, Ohio, has issued its Bulletin No. 33, which describes and illustrates its line of underground water service fittings including coupling unions, elbows, globe valves, service stop valves, corporation cocks, tube benders, flaring tools, tube protectors and anchors, etc.

Unit Heater Catalog

Autovent Fan & Blower Co. of Chicago, Ills., has just issued its catalog No. 31, illustrating and describing in detail its line of unit heaters, their construction, installation and operation. Several diagrams of piping details and many capacity tables add much to the value of this catalog which is printed in two colors. Reproductions of photographs of a few typical installations of these heating systems in various types of buildings are also included in this catalog.

A Burner for Oil or Gas

Bryan Steam Corporation of Peru, Ind., is mailing a folder to the trade illustrating and describing its new burner which is designed to handle either oil or gas with equal efficiency and in an economical manner.

Folder About Sales Curves

The Permutit Company of New York City has issued a folder with a suggestion of how to keep your salesman working at a profit all year round. The folder shows sales charts of several lines of products including water softeners.

Broadside and Poster of Heating Specialties

H. M. Sheer Co. of Quincy, Ill., has just published a combination broadside and poster, 36 x 22 in., illustrating and describing its heat producing and temperature controlling equipment, including heat regulators, thermostats, humidifiers, electric gas valves with transformers and thermostats, etc. The poster is printed in two colors, black and red.

"The Path to Permanence"

"The Path to Permanence" is the title of an exceptionally attractive book, 72 pages, 8¾ x 11 in., just issued by Republic Steel Corporation of Youngstown, Ohio, containing the history of its copper molybdenum iron with many illustrations showing how this metal is produced. One section of the book gives a list of some of the uses for this metal, and another section tells what a few users say about it. The last pages of the book are set aside for halftone engravings of large buildings in which this metal is used, including public buildings, office buildings, hotels, colleges, churches, theaters, hospitals and residences as well as bridges, railroads, grain elevators and mines, stoves and ranges, refrigeration systems, culverts and drains, etc.

Left to right: W. L. Travers, Chicago, and H. H. Clark, Indianapolis, both of Merco-Nordstrom Valve Co., Inc., San Francisco, Calif.; Thomas Kenney, Chicago, and A. S. Bain, Washington, D. C., both of James P. Marsh & Co., Chicago. Photos taken at the annual convention of the Heating and Piping Contractors National Association, held recently at Louisville

FREE TO TRAVELERS

•

Mail coupon for valuable credit coin

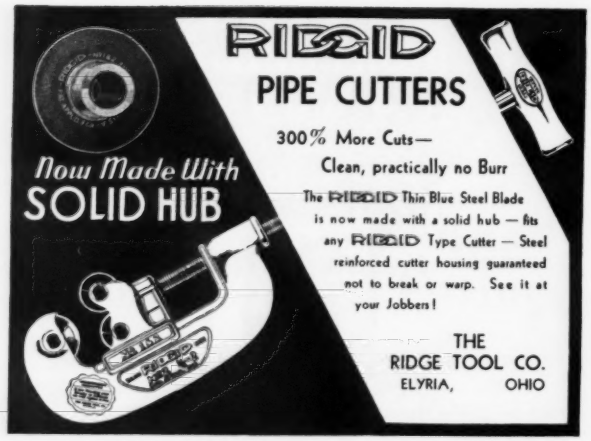
To help you, cash checks in the 24 United Hotel Cities. This coin instantly establishes your identity... avoids delay in checking out. No one else can use it.

To help your Wife or Mother, when they travel alone. Women need United Hotel Credit Coin protection. When necessary to charge hotel services, this coin is the quick way to establish identity. Made of dull silver... fits change purse or key ring.

To help your Business Associates, save time when stopping at United Hotels. They can avoid check-cashing delays with this coin. 4165 executives enjoy its convenience.

Mail Coupon Today. Secure this extra service for yourself and others. There is no charge for issuing or using this coin.

UNITED HOTELS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PIPE CUTTERS
300% More Cuts—
Clean, practically no Burr
The RIGID Thin Blue Steel Blade is now made with a solid hub — fits any RIGID Type Cutter — Steel reinforced cutter housing guaranteed not to break or warp. See it at your Jobbers!
Now Made With
SOLID HUB
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RIDGE TOOL CO.
ELYRIA, OHIO

Stop pipe thread leaks with SMOOTH-ON No.1 in a

SMOOTH-ON CLAMP

Sizes for 1-in. to 12-in. pipe

QUICK, easy, cheap and dependable. Holds for the life of the line—steam, hot or cold water, gas etc., any pressure, any temperature, iron, brass, or copper pipe. No interference with bolt heads or nuts of flanged joints. Get Smooth-On Clamps and Smooth-On No. 1 from nearest supply house or from us.

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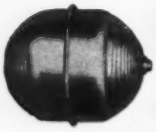

4"x5" Oval Float

NO-SOL COPPER FLOATS

No-Sol Floats incorporate all features necessary to the satisfactory performance of a tank float.

Each float is individually tested and guaranteed.

INCORPORATED 1907

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3047 N. Erie St. Toledo, Ohio

5" Round Float

WISECO

TUBULAR BRASS GOODS
now regularly furnished with
NICKEL SILVER
BEAD CHAIN

Make Wiseco your standard and benefit by forward looking manufacture

J. B. WISE, Inc., Watertown, N. Y.

New Contractors and Incorporations

Tripoli, Ia.—H. W. Krueger has opened up a plumbing and heating business here.

Washougal, Wash.—C. A. Binder, formerly of Moro, Ore., has opened a new plumbing shop in the Carleton building in this city.

New York City—The firm of William Hogan, Inc., has been chartered with a capital of $2,000, by William A. Hogan and associates, to establish and operate a plumbing and heating engineering and contracting business. E. Weiss, 25 Broad street, represents the new concern.

New York City—The Albiss Plumbing and Heating Company has been organized and incorporated, with a capital of $10,000, to establish and operate a plumbing and heating engineering and contracting business. M. Baron, 111 Clay street, Brooklyn, N. Y., represents the new concern.

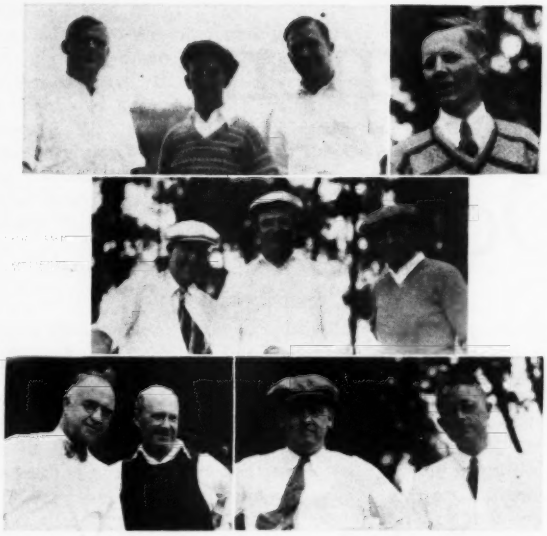
New York City—With a capital of $10,000, the Stuart Plumbing and Heating Corp. has been chartered, to establish and operate a plumbing and heating engineering and contracting business. The law firm of Rothstein and Rothstein, 261 Broadway, represents the new corporation.

Jamaica, N. Y.—The Rogers Plumbing and Heating Company has been organized and incorporated, with a capital of $20,000, to establish and operate a plumbing and heating contracting business. The new concern is represented by the law firm of Jacobson and Jacobson, 217 Havemeyer street, Brooklyn, N. Y.

Massapequa, N. Y.—Louis E. Bergman and Robert G. Bergman have established plumbing and heating offices and showroom, to be known as the Nassau Shores Plumbing and Heating Company, Merrick road, in this city.

Oklahoma City, Okla.—J. H. Volz, plumbing and heating contractor of this city, recently moved into attractive new quarters at 1103 North Villa street.

Top row, left to right: Jack Knoll, Holland; David Damstra, secretary of Holland association; Henry Kraker of Holland, vice president of Michigan State association; Frank E. Stuart of Detroit, state field secretary. Middle row: Children lining-up for the start of the races. Bottom row: Samuel Mathews; B. F. Brady; W. K. Lusk; Frank H. Dains, chief state plumbing inspector. Pictures taken at the recent outing of the Lansing, Mich., Master Plumbers' Association



Top row, left to right: William Hoier; L. T. Braun, secretary of the association; C. E. Crone; E. J. Pecher, handicapper. Second row: J. W. Bunge, Hans Jensen, and T. J. Gleason. Bottom row: J. C. Matchett, Illinois Engineering Co.; G. H. Dickerson; R. D. Berry, vice president of the association; and S. A. Pope. Photos taken at recent monthly golf tournament of the Chicago Master Steamfitters Association, held at Nordic Country Club

Pendleton, Ore.—The plumbing equipment of the late Alexander Burt, Pendleton, has been sold to the Wallowa Valley Plumbing & Heating Co., and has been moved to Enterprise, Ore.

St. Louis, Mo.—The Controlled Heat, Inc., has been chartered with a capital of $20,000, by Harvey H. Sims, 80 Arundel street, and others.

Portland, Ore.—H. A. Looney, J. W. Looney and H. Kemp have engaged in the plumbing and heating business at 5013 63rd street.

New York, N. Y.—The Bathroom Accessories Corp., has been chartered with a capital stock of $20,000 by Leo Lillenfeld, Louis Witlin and B. Eisgrau, 5 Beekman street.

New York City—James E. Bennett and associates, have organized the firm of James E. Bennett, Inc., with a capital of $1,000, to establish and operate a plumbing contracting and engineering business. J. J. O'Grady, 277 Broadway, represents the new concern.

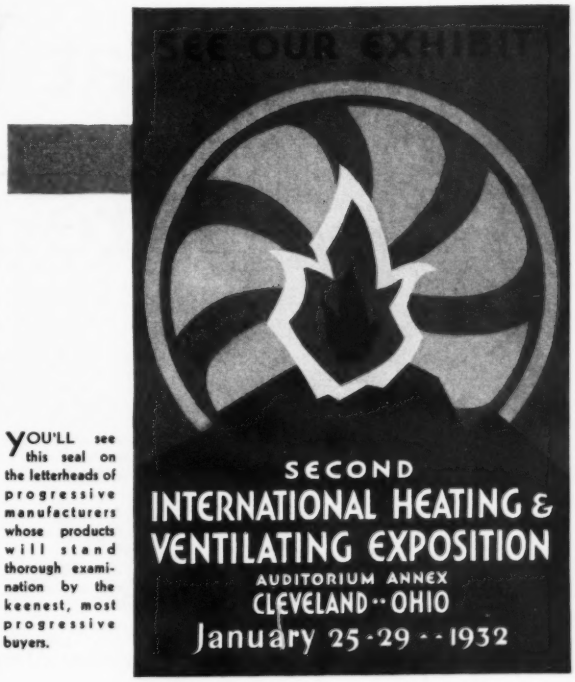
New York City—With a capital of $12,000, the Chatham Plumbing and Heating Co. has been organized and incorporated, to establish and operate a plumbing and heating contracting and engineering business. The new firm is represented by G. Sprung, 123 William street.

Tacoma, Wash.—The Power Plant Engineering Co. has been incorporated with a capital of $5,000, to engage in the heating, ventilating, refrigerating and plumbing business, by M. S. McNonell and F. C. Hansen.

Los Angeles, Calif.—The W. T. Collard Co. has engaged in the plumbing and heating business at 8415 South Main street, under the management of Warren T. Collard.

Los Angeles, Calif.—The Dependable Plumbing Service has engaged in business at 4117 West Tenth street, under management of William Zappey.

Stillwater, Okla.—F. S. Pearson has re-entered the plumbing and heating contracting business here, and has opened a new shop at 106 West 7th street. Mr. Pearson formerly operated a shop in this city.



YOU'LL see this seal on the letterheads of progressive manufacturers whose products will stand thorough examination by the keenest, most progressive buyers.

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AN exposition which brings to alert manufacturers the greatest number of potential buyers in the shortest space of time at a minimum expense.

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Both are free from the distractions of their daily work.
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AN INTERNATIONAL EVENT HELD EVERY TWO YEARS

Under the auspices of the American Society of Heating & Ventilating Engineers

Managed by the International Exposition Company 1054

What Women Are Doing

It's a Great Life If Your Endurance Is Good!

Another complete short story, from the interesting biography of the wife of one of the men in the trade who, as you will find, is doing much to promote her husband's business. This interesting story tells how this clever business woman helps in her husband's office

AS A FIRST step toward purchasing efficiency, I proposed to buy what material I could in carload lots, thereby taking advantage of the extra discount for carload shipments. Circumstances and finances had forced us heretofore to purchase in small quantities, but I reasoned that now with the clinic contract sewed up, and it looked as big as a skyscraper contract to me, we could effect a considerable saving by purchasing in larger quantities.

By pooling the orders at hand, I found that I had sufficient tonnage to make up a minimum car, with the exception of about 2,000 pounds, and so, clever purchasing agent that I thought myself to be, I ordered a small outfit for stock to make up that deficiency in weight, thinking that we could readily dispose of it before or at least as soon as it arrived. The car came, the time rolled around when it had to be paid for, and still that extra outfit that I had blithely ordered for stock was on our hands. What a regular "white elephant" it did turn out to be! Other outfits similar to it were sold time and again, but this one particular outfit was never just the right style or the right size or the right something. It remained in stock until the following spring, working capital tied up in it, and the fancied saving due to the carload discount more than offset by our efforts to unload it. By other more practical economies I did manage to break even on the purchases for the clinic building, but by the time it was completed, I had decided that as a buyer I was nothing to brag about, and someone else could handle that end of the business so far as I was concerned.

Service and sales seemed to hold a greater fascination for me, and I began to concentrate my attention along those lines. I took great pride in the service that we gave, and I was quite sure that it was the very best service of any kind that could be had in town, for we tried so hard, no one could possibly try harder to give a customer what he wanted. From the time a call came in, it was followed conscientiously to see that it was taken care of promptly and to the best of our ability. (To be continued.)

National President Sends Christmas Greetings to Auxiliary Members

Mrs. J. Preston Perham, of West Roxbury, Mass., president of the Women's Auxiliary to the National Association of Master Plumbers sends the following Christmas and New Year's message to her fellow auxiliary members:

A Merry Christmas and a Happy New Year to all Auxiliary members and their families!

Christmas, with its message of peace and goodwill to men!

Although the heart may be heavy, the season brings something of peace, and our wish for all Humanity is that Peace may truly reign in this troubled old World of ours.

A new year will soon be with us and will bring Opportunities that we may grasp, if we will. Let us make the best of it, and let us resolve to repress the unkind word, and try to make someone happier each day through the year.

More of life's joy and gladness
More of its peace and cheer
More of its faith and glory
May Christmas bring you each year.

Oakland Auxiliary Entertains With Turkey-Whist

The Ladies' Auxiliary to the Oakland, Calif. Merchant Plumbers' Association ushered in the holiday season on the evening of November 16 with a turkey-whist party at Plumbers' Hall. There were nineteen tables of players. The major prizes consisted of six "gobblers."

The following won honors at whist: James Morse, Miss May Rankin, B. T. Schullerts, Mrs. Ed. Hays, Walter

Lahr and Mrs. Quigley Driver. Prizes also went to J. W. Rankin, N. J. Previati and A. Betz.

Coffee and home made doughnuts were served by the hostesses. Mrs. B. T. Schullerts headed the committee in charge of arrangements, being ably assisted by Mesdames J. W. Rankin, Herbert Graham and A. LeGassick. Plans are now well under way for the customary frolic and Christmas tree party, the high spot of the season's social activity, the date for which has been set for December 21.

Salem, Ore., Auxiliary Works to Promote Friendliness

The Salem, Ore., Women's Auxiliary, while having a membership of only six persons, holds a business and a social meeting each month. Following the business meetings, sewing is usually enjoyed. The members are making tea towels with designs for outline work. These towels are in demand among friends and are easily sold. The funds thus accumulated are used for charitable purposes.

Social meetings include the master plumbers. Sometimes dinners are held to celebrate a birthday or wedding anniversary. Other times the auxiliary members entertain with cards, followed by refreshments. The main object of the auxiliary is to create a spirit of friendliness and interest among those who are members of the same craft and it is with that idea that the members carry out their plans.

Orange, N. J., Auxiliary Gives Party

On October 22 a masked party was held at the meeting rooms of the Women's Auxiliary of Orange, N. J. There were about 55 present, which included master plumbers and friends. The grand march began at 10:30, and unmasking took place later. Refreshments were served and dancing was enjoyed during the evening.

Milwaukee Auxiliary Gives "Thanksgiving Baskets"

"Thanksgiving Baskets" were furnished this year to unemployed journeymen plumbers from the proceeds of the huge card party held by the Ladies' Auxiliary of the Milwaukee Master Plumbers' Association at the Elks' club on Friday, November 13.

Mrs. Walter Tesch was chairman of the committee on arrangements for the card party, which included some 100 tables.

Baskets were distributed by a committee consisting of

Left to right: Mrs. Walter Dusold, Milwaukee; Mrs. Rose Friend, historian of the National Auxiliary, and Miss Marie C. Kohler. The photograph was taken at Kohler, Wis., where some 2,000 master plumbers and their families inspected the Kohler Co.'s plant, following the National convention in Milwaukee. Mrs. Friend celebrated her 83rd birthday at an auxiliary meeting on June 22

A Compact Vitreous China Fountain *of Outstanding Efficiency*

ILLUSTRATED is a modern Century Drinking Fountain of medium size. It is attractively designed of fine vitreous china. It incorporates, like all Century Fountains, many outstanding features. The self-closing stop-cock is strong and sturdily constructed. Exposed brass is nickeled and then chromed. Century Fountains are factory tested under actual working conditions. They provide a lifetime of care-free service.

Equipped with the Famous Century Automatic Bubbler, they are undoubtedly the most efficient in all America.

This simple brass unit maintains, at all times, regardless of fluctuating water pressure, a normal, wholesome drinking stream. Connected direct to line pressure, volume controls and manual servicing are unnecessary. Sudden splashing gushes of water have been definitely eliminated. The unsanitary inconvenient trickle is unknown. Each turn of the handle produces a clean, wholesome drink.

Century Fountains comply with all modern Health Rules and Regulations. We ask you to investigate these outstanding fountains now. Write for complete information.

CENTURY BRASS WORKS, *Inc.*
900 North Illinois St. Belleville, Illinois

Century Sanitary Drinking Fountains

Order From Your Jobber

"X" Finds the Leak *and* Seals it!

Wise Plumbers and Fitters rely on "X" Boiler Liquid. Pour "X" in the boiler—it quickly finds all leaks, seeps through and, on contact with air, hardens like iron. For steam and hot water heating systems—high and low pressure boilers.

"X" LABORATORIES, 25 WEST 45th ST., NEW YORK, N. Y.

"X" Boiler Liquid

NEW LOW PRICES
SPENCER
MAGAZINE FEED BOILERS

The cost of a Spencer Magazine Feed Boiler and one year's supply of Buckwheat Anthracite is now the same as the cost of an ordinary flat-grate boiler and one year's supply of large size Anthracite. The many exclusive Spencer advantages cost your customers nothing extra, but you make more money.

Write us for full details of the Spencer plan and how it will build profitable sales for you

SPENCER HEATER COMPANY, WILLIAMSPORT, PA.
Spencer Heater Co. of Canada, Ltd., Toronto, Ontario

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Walworth Company, General Sales Offices:
60 East 42nd St., New York

Plants at Boston, Mass., Kewanee, Ill.;
Greensburg, Pa., and Attalla, Ala.

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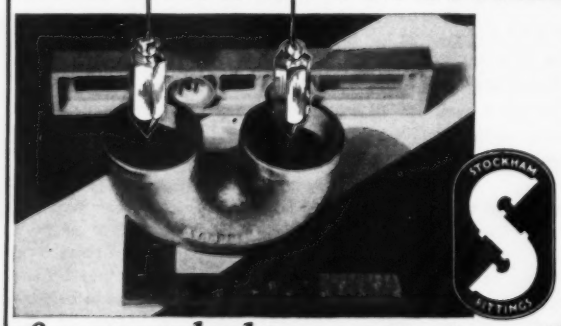


for straight lines and strength

two past presidents and three vice presidents. Mrs. Charles Pelunek and Mrs. Otto Waskow are the past presidents represented on the committee, and Mrs. William Schoenrock, Mrs. Walter Dusold, and Mrs. William Hahn are the vice presidents.

Mansfield, Ohio, Auxiliary to Hold Christmas Party, Dec. 17

The Mansfield, Ohio, Women's Auxiliary held its November 18th meeting at the home of Mrs. Ruth Marlow. Plans were made for a Christmas party at which time an exchange or grab bag will add much to the enjoyment of the party. Each member is to bring a donation to be placed in a basket and given to a needy family.

The October 29th meeting was held at Mrs. E. F. Malone's home. A comforter was knotted for a needy family, following the business session.

The Christmas party is to be held at the home of Mrs. Herman Hoffman, on Scholl road, on December 17.

Boston Auxiliary Holds Meeting

The Boston, Mass., Women's Auxiliary held its first autumn meeting at the home of Mrs. William McAuliffe, in Roslindale, on October 27. Mrs. Arthur I. Russell, president, was in the chair. All officers were present, including the two recently elected National officers, Mrs. J. Preston Perham, president, and Mrs. Herbert L. Rose, Jr., secretary.

Following the business meeting, the men folk joined in the social hour. Delicious refreshments were served.

Denver Auxiliary Plans Christmas Party

The Ladies Auxiliary to the Denver, Colo., Master Plumbers Association met at the home of Mrs. F. H. Samson on November 18. A delicious luncheon was served and plans were made for the annual Christmas party, to be held December 19. Whist was played with Mrs. Demmer and Mrs. Smith carrying off the honors.

Pasadena Auxiliary Honors Past Presidents

The Women's Auxiliary to the Pasadena, Calif., Merchant Plumbers Association commemorated Past Presidents' Day on November 16 at a meeting at the new home of Mrs. George Shirk, who was assisted in entertaining by her mother, Mrs. J. F. Walker. Among the past presidents of the auxiliary present were Mrs. D. Chapman, Mrs. A. R. Benedict, Mrs. W. F. Creller, Mrs. W. H. Swihart and Mrs. A. C. Hanson.

Mrs. Shirk served a delightful luncheon, the table being decorated with chrysanthemums. Sewing and various games consumed the balance of the afternoon.

The auxiliary will not hold a regular meeting in December, but instead arrangements are being made for a Christmas party.

Schenectady Auxiliary Makes Plans for Christmas

The Schenectady, N. Y. Women's Auxiliary held its November meeting at the home of Mrs. F. DeForest, at which time plans were made for Christmas. Each member is to make a scrap-book and bring it to the December meeting. Christmas tree stockings will be made at this meeting, to be filled with candy and nuts and sent together with the scrap-books to the children in the City hospital.

Mrs. DeForest offered her home for a Christmas party, to which the men will be invited, on December 21. A buffet supper will be prepared by the ladies. A grab-bag will be the feature event of the evening and games will also be played.

Pipe —— Lines
Connected by LyT

The gentleman who edits a little sheet known as "The Insert" has one or two interesting comments on the matter of politics. Sez he, concerning applicants for the Presidency:

> "After reading the announcements of some who have tossed their hats into the ring, we have come to the conclusion that many a politician who claims that he hears his country calling, is a darn good ventriloquist."

And, concerning the calling of the politician:

> "If you think being a politician is easy, try standing on a fence and keeping one ear on the ground."

WELL, WELL, WE HAVE TO SATISFY PUBLIC TASTE

James: "Papa, I ain't got no butter."
Papa: "John, correct your brother."
John (looking over into James' plate): "Yes, you is."

THE SWEET YOUNG THINGS

Two young women were having lunch at the same table. But it was obvious they did not know each other. One had just finished her lunch, and the other was about to begin. The one who had finished her lunch leaned back and lit a cigarette, much to the annoyance of the young woman just about to eat.

"I suppose," said the latter, sweetly, "you don't object to my eating while you're smoking?"

But the other was not to be stopped. Even more sweetly she replied: "Oh, no, not so long as I can hear the orchestra."

LEIGHTON'S GLOOM CHASER.

IF YOU UNDERSTAND WHAT HE MEANS

First Mug: "Say, dat guy busted de crystal on me watch."
Second Mug: "Well, give him de woiks."

HEARD THIS ONE?

When interviewed in jail recently, Boxcar Bertie said he smoked only quarter cigars. Probably the last quarter, too.

HIGH FINANCE

1st Actor: "Lend me ten dollars, will you?"
2nd Actor: "Here—take five. You lose five and I lose five."

CHECK!

After an immense amount of trouble, the vicar of a country parish succeeded in reconciling two old women who had been quarrelling for years. He even induced them to meet under the vicarage roof.

In his drawing room they shook hands. After an embarrassed silence, one of them said:

"Well, Mrs. Tyler, I wish you all you wishes me."

"An' who's saying nasty things now?" snapped Mrs. Tyler.

ILLINOIS MASTER PLUMBER.

OUR NATIONAL ANTHEM

"The rapidly increasing divorce rate," remarked the wit, "indicates that America is indeed becoming the land of the free."

"Yes," replied his prosaic friend, "but the continued marriage rate suggests that it is still the home of the brave."

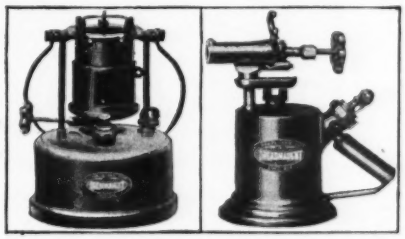
THESE IRISH—YOU WONDER SOMETIMES

Boss: "Mike, I'm going to make you a present of this pig."

Mike: "Sure, now, Boss, an' 'tis just loike you, sor."

Nevada, it is said, is thinking of doing away with the marriage knot and substituting snap fasteners. L Y T.

A NEW LINE..
of WALL products
at a NEW LOW PRICE



Write for complete information. Ask for our plumbers' circular.

THOUGH lower in price than ever before, each is a newly developed WALL product designed to serve best your most particular needs, without the sacrifice of typical WALL quality features! It will pay you to get in touch with your jobber at once—or for jobbers to get in touch with us.

P. Wall Mfg. Supply Company · Pittsburgh, Pa.

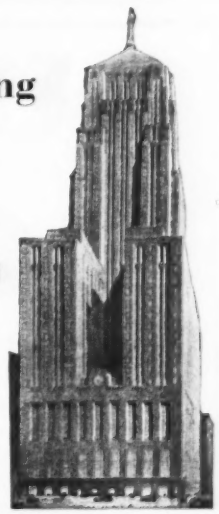
SINCE WALL SUPERIOR PRODUCTS 1864

DREADNAUGHT
"Service with Safety"
BLOW TORCHES · · · FURNACES AND OILERS

Chicago Board of Trade Building

IS EQUIPPED WITH

Patterson
Hot Water Heaters



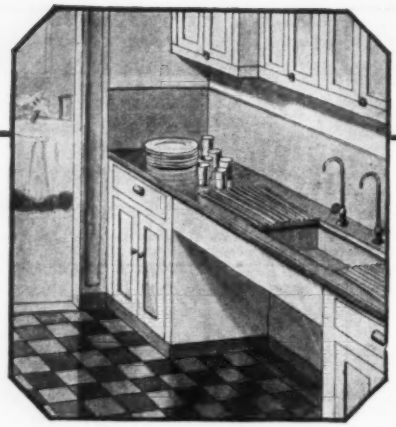
Architects, Holabird & Root
Plumbing Contractor, M. J. Corboy Co.
Heating Contractors, Mehring and Hanson.

In Chicago, too, Patterson Hot Water Heaters will be found in most of the super-structures.

Buildings like the above, the Tribune Tower, Wrigley Building and the Palmer House in Chicago; the Book Tower Building in Detroit; the Security-First National Bank, Los Angeles; the Chrysler and the Empire State Buildings in New York—these and thousands of other buildings, both large and small, rely on Patterson Heaters to furnish all the hot water required, as hot as required and as quickly as required.

If you want dependable hot water service, play safe and specify the "Patterson." *Our catalog sent on request.*

THE PATTERSON-KELLEY CO.
106 East 40th Street - NEW YORK, N. Y.



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Don't overlook any chance to "get in" on pantry renovating jobs.

You can sell an Alberene Stone Sink and get it in whatever size you need.

Probably the customer already is using an Alberene Laundry Tray so she will know all about Alberene's cleanliness and durability. Watch out for pantry sink business!

ALBERENE STONE CO.
153 West 23rd Street, New York

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Bath a Day Movement

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A letter from a little school girl says: "May we have enough copies of 'The Story of the Bath' for the students in my class? My teacher told me to write you." That inquiry will be referred to the local association, if there is one; if not, to the state association for action

BY REFERRING these inquiries, we give local or state associations an opportunity to work in the community from which the request comes. Placed in the hands of the school children, especially where an alert local group of master plumbers sees all of the opportunities, the distribution of "The Story of the Bath" can be made the basis of a fine publicity campaign. Write for details.

Also ask for details concerning distribution of the booklet to Kiwanis, Rotary, Lions, and other civic club memberships. We have a "Twenty-Minute Program" for the use of master plumbers who are members. The material is complete, and will enable the plumber member to put on an interesting entertainment on "Plumber's Day."

Little Sentences That Sell

Write one of these BLACKBOARD EPIGRAMS on your window or bulletin board each day. Many master plumbers and heating contractors find them real business getters.

A bad memory is the skeleton in the liar's closet.

* * *

Parrots should be taught to speak only in polysyllables.

* * *

Short accounts make long friends—sometimes.

* * *

Fault is often found where it is not.

* * *

When a fireman works the hose it is only in play.

* * *

The bank wrecker may be bailed out, but the bank usually sinks.

* * *

Masked balls are the only kind that go in a prohibition town.

* * *

You couldn't raise the hopes of some people with a derrick.

* * *

It is the silent man that usually is worth listening to.

* * *

A stump speech ought to be short.

* * *

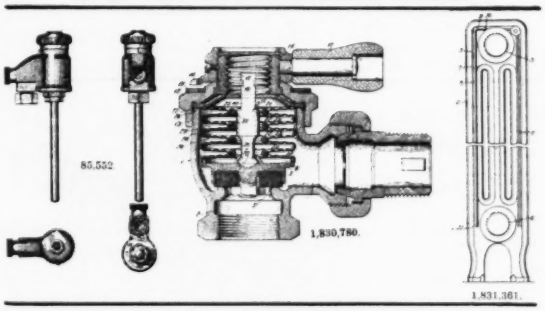
All some men want is half a chance, but the majority prefer a whole one.

PATENTS

Plumbing Department

85,552. The Ornamental Design for a Radiator Valve. Paul F. Shivers, Wabash, Ind., assignor to Minneapolis-Honeywell Regulator Company, Minneapolis, Minn., a Corporation of Delaware.

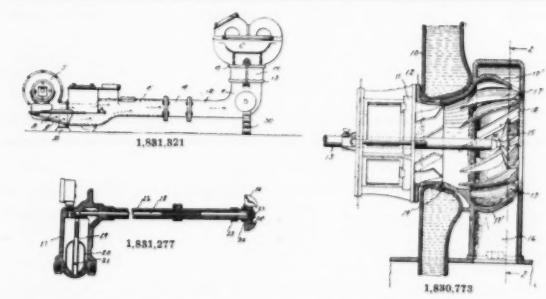
1,830,780. Packingless Expansion Member. Harry Brennan and Benjamin H. Wilding, Marshalltown, Iowa, assignors to C. A. Dunham Company, Marshalltown, Iowa, a Corporation of Iowa.



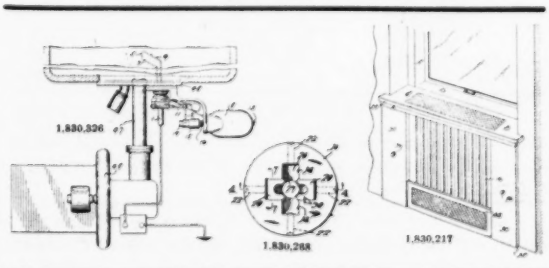
1,831,361. Radiator Shield. Malcolm W. McRae, Chicago, Ill., assignor to Crane Co., Chicago, Ill., a Corporation of Illinois.

1,831,321. Oil Burner. Albert V. Pickering, Woonsocket, R. I.

1,831,277. Fluid Fuel Burner Construction. Walter W. Williams, Bloomington, Ill., assignor to Williams Oil-O-Matic Heating Corporation, Bloomington, Ill., a Corporation of Illinois.



1,830,773. Oil Burner. Thomas B. Stillman, South Orange, N. J., assignor to The Babcock & Wilcox Company, Bayonne, N. J., a Corporation of New Jersey.



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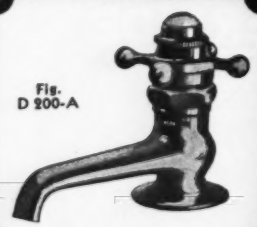

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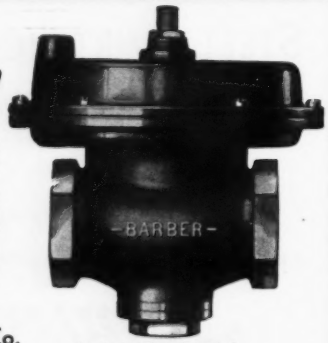

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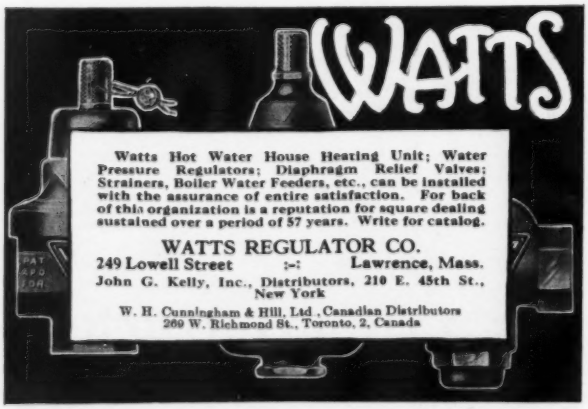

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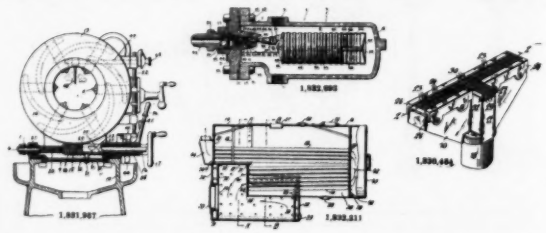
1,830,326. Ignition Mechanism. James N. Macrae, Stamford, Conn., assignor to Petroleum Heat and Power Company, New York, N. Y., a Corporation of Delaware.

1,830,268. Die Holder. Michael J. Foley, Greenfield, Mass., assignor to Greenfield Tap & Die Corporation, Greenfield, Mass., a Corporation of Massachusetts.

1,830,217. Radiator Inclosure. Addison C. Armstrong, Baltimore, Md., assignor to Campbell Metal Window Corporation, Baltimore, Md., a Corporation of Maryland.

1,831,957. Die Head. Charles P. Harrison, Wesleyville, Pa., assignor to Jarecki Manufacturing Co., Erie, Pa., a corporation of Pennsylvania.

1,832,693. Float Valve. Lewis W. Eggleston, Detroit, Mich., assignor to American Radiator Company, New York, N. Y., a corporation of New Jersey.



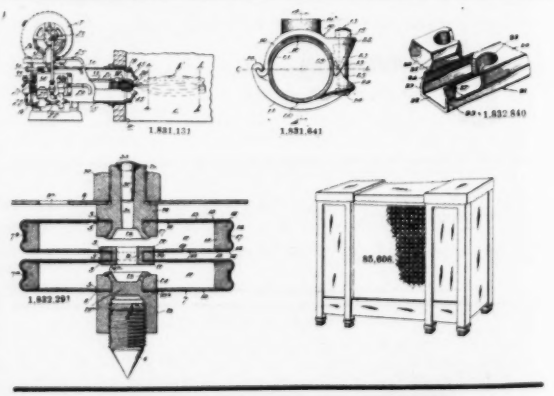
1,830,464. Gas Burner. George A. Guenther, Buffalo, N. Y.

1,832,311. Boiler. John W. Lockett and Sydney Tucker, Oswego, N. Y., assignors to Fitzgibbons Boiler Company, Inc., Oswego, N. Y., a corporation of New York.

1,831,131. Oil Burner. Hannibal A. Kunitz, Stratford, Conn.

1,831,641. Pipe Clamp. Mortimer B. Skinner, Wilmette, Ill., assignor to M. B. Skinner Co., South Bend, Ind., a Corporation of Indiana.

1,832,840. Thread Cutting Die. Steven B. Wilson, Newton, Mass.



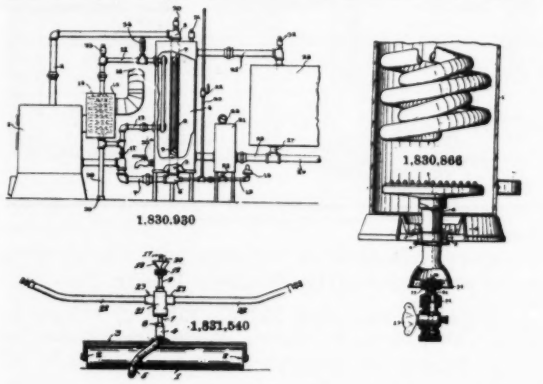
1,832,291. Steam Trap. James L. Fitts, Merchantville, N. J., assignor to Warren Webster & Company, a corporation of New Jersey.

85,608. Radiator Cabinet. Francis N. Woodman, Clinton, Mass., assignor to Wickwire, Spencer Steel Company, New York, N. Y., a corporation of Delaware.

Heating Department

1,830,930. Apparatus for Heating Water for Domestic Use. George Morris Conekin, Asheville, N. C.

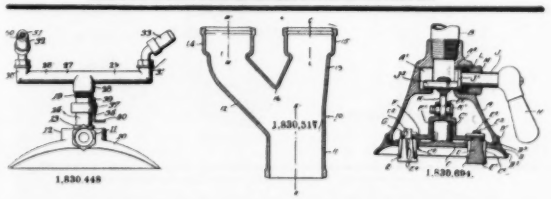
1,831,540. Lawn Sprinkler. Lewen R. Nelson, Peoria, Ill.



1,830,866. Water Heater. Walter W. Ziegler, Lakewood, Ohio, assignor to The Cleveland Heater Company, Cleveland, Ohio, a Corporation of Ohio.

1,830,448. Lawn Sprinkler. William Steininger, Berwyn, Ill., assignor to W. D. Allen Manufacturing Company, Chicago, Ill., a corporation of Illinois.

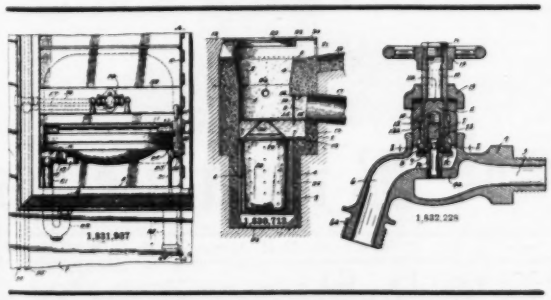
1,830,517. Combination Fitting. Henry J. Luff and Willard J. Luff, Cleveland Heights, Ohio; said Henry J. Luff assignor to said Willard J. Luff.



1,830,694. Shower Head. James Fraser, Edgemoor, Del., assignor to Speakman Company, Wilmington, Del., a corporation of Delaware.

1,831,937. Swinging Lavatory. Earl G. Watrous, Chicago, Ill.

1,830,713. Sewer Catch Basin Unit. Isaac Charles Palmer, Pittsburgh, Pa.



1,832,228. Faucet or Valve. William J. Mattson, St. Paul, Minn.

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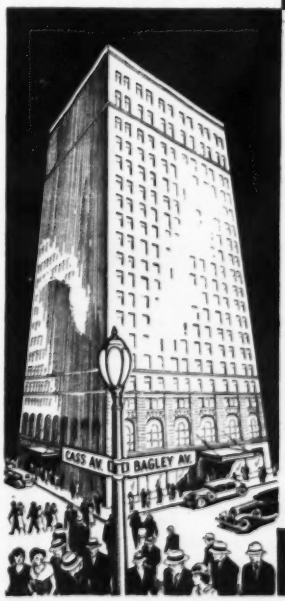

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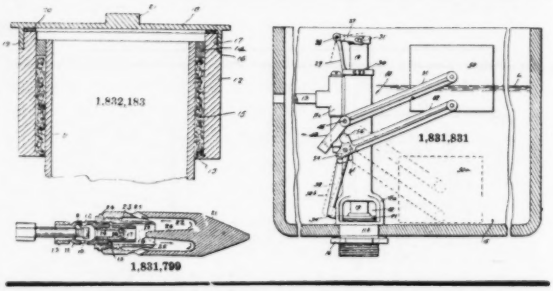
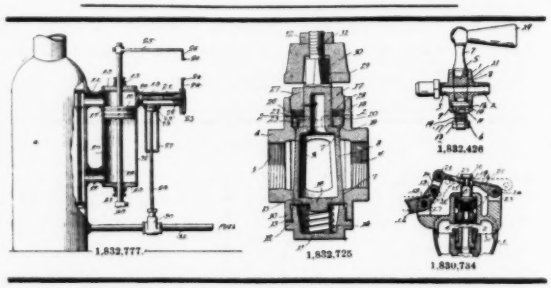


1,831,799. Gas-Heated Soldering Iron. James B. Anderson, Shaler Township, Allegheny County, Pa.

1,831,831. Flush Tank Valve. Elihu C. Wilson, Los Angeles and James F. Craven, Eagle Rock, Calif; said Craven assignor of three-fourths of his interest to said Wilson.

1,832,777. Boiler Explosion Preventer. Deloss V. Hurtubise, Oklahoma City, Okla.

1,832,725. High Pressure Inverted Plug Valve. Frank H. Mueller, Decatur, Ill., assignor to Mueller Co., Decatur, Ill., a corporation of Illinois.



1,832,426. Valve Assembly. Earl W. Roberts, Detroit, Mich., assignor to Roberts Brass Manufacturing Company, Detroit, Mich., a corporation of Michigan.

1,830,734. Valve Structure. Louis A. Cornelius, Grand Rapids, Mich., assignor to Wolverine Brass Works, Grand Rapids, Mich., a corporation of Michigan.

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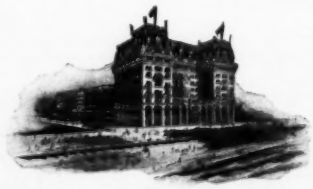
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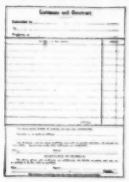

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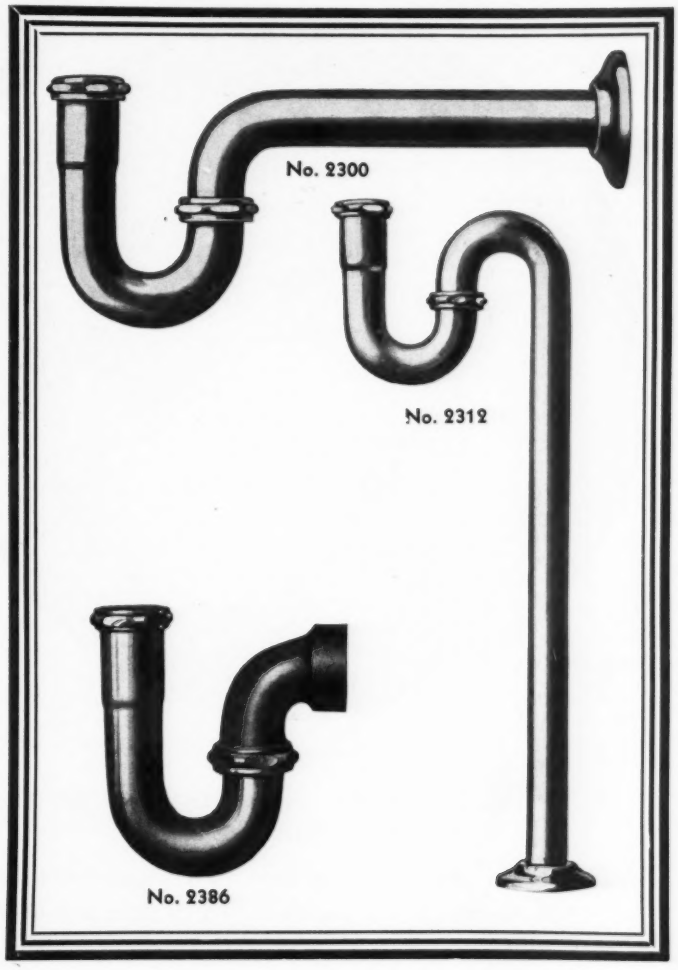

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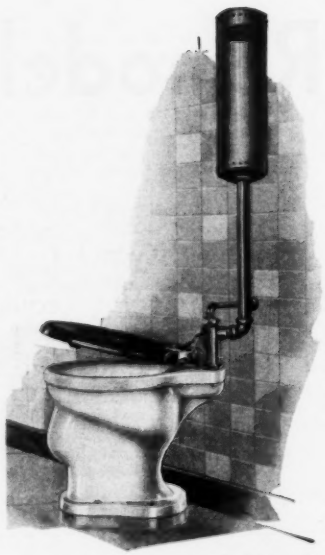

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